

# Router Training Tutorial

# Mastercam®

X<sup>4</sup>



## Router Training Tutorials

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## **Mastercam® X<sup>4</sup> Training Tutorials - Router Applications**

Date: August 6, 2009

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Software: Mastercam X<sup>4</sup> Router

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ISBN: 978-1-926566-38-2

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### **Acknowledgments**

We would like to thank the In-House Solutions team for its recommendations and input.



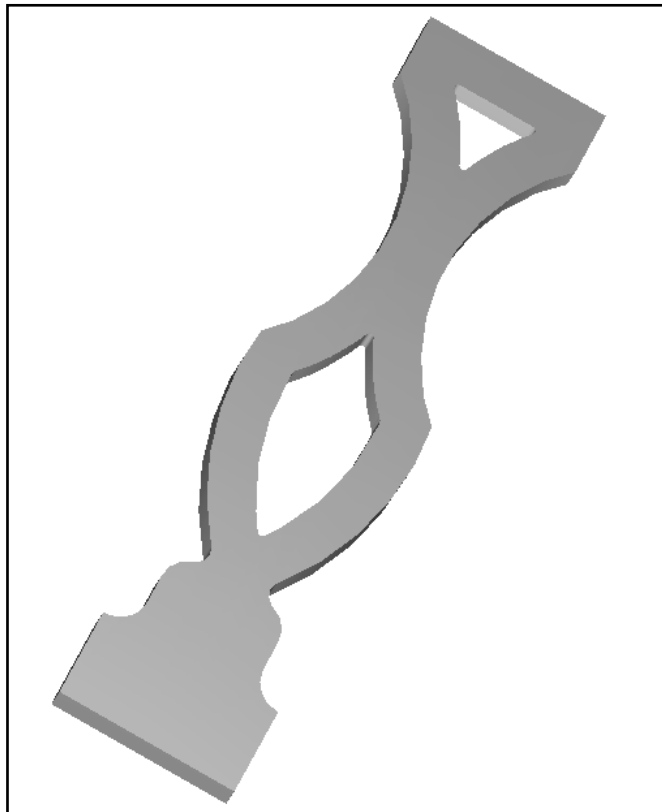
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## TUTORIAL SERIES FOR

***Mastercam*** X<sup>4</sup>

### TUTORIAL # 2 2D GEOMETRY, POCKET & CONTOUR



## **ROUTER X<sup>4</sup>**

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### **Objectives:**

#### **The Student will design a 2-dimensional wireframe drawing by:**

- Creating a rectangle using the 1 point method.
- Creating parallel lines, by defining the offset direction and distance.
- Creating arcs using polar command.
- Creating a line knowing the endpoints of the line.
- Trimming 1 entity to another existing entity.
- Creating arcs knowing the radius and the center points of the arcs.
- Trimming two entities up to the intersection point between the entities.
- Deleting extra construction lines.
- Offsetting entities with a given distance.
- Mirroring existing geometry to complete a part.
- Modifying an entity by breaking it in two pieces.
- Creating fillet radii.

#### **The Student will create a 2-dimensional milling toolpath consisting of:**

- A 2 dimensional contour.
- Machine the two pockets in one operation.
- Remachining the two pockets using a smaller tool that will remove the material only in the area where the previous tool could not fit.

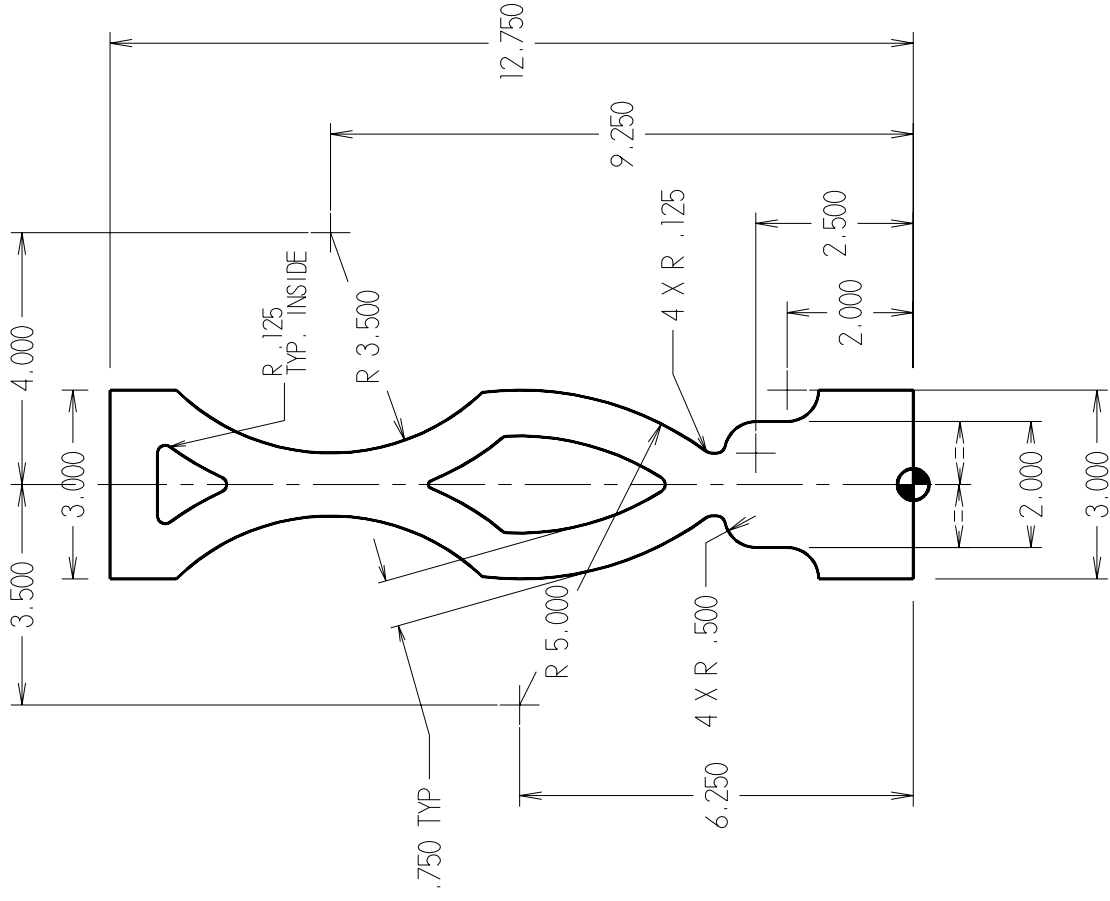
#### **The Student will check the toolpath using Mastercam's Verify verification module by:**

- Running the Backplot function.
- Defining a 3 dimensional rectangular block the size of the work piece.
- Running the Verify function to simulate machining the part on the screen.

#### **The Student will generate the NC file by:**

- Running the Post processor.

ALL DIMENSIONS IN INCHES



TITLE TUTORIAL #2

MATERIAL WOOD

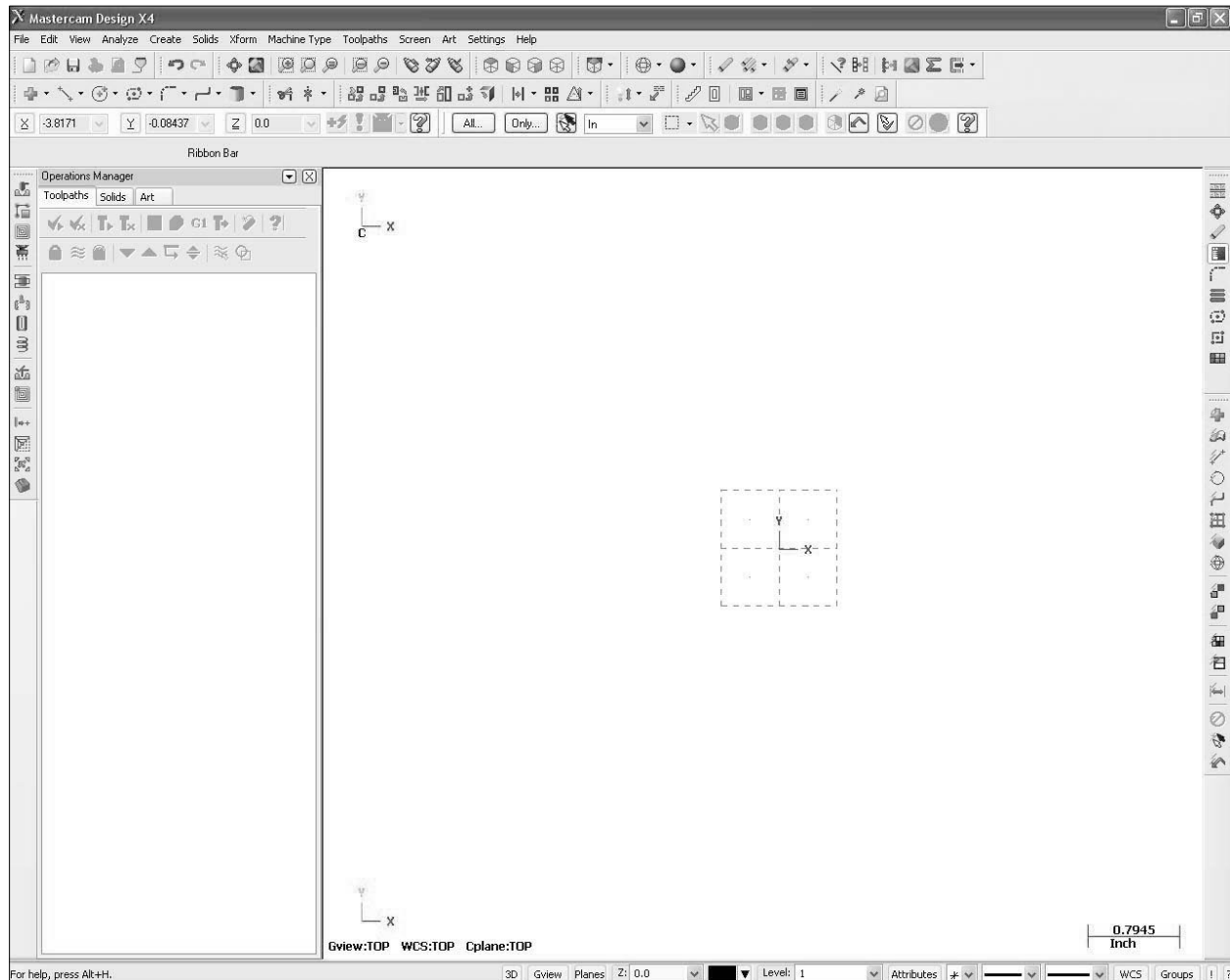
DATE: JUNE 19, 2001

eMastercam.com

## GEOMETRY CREATION

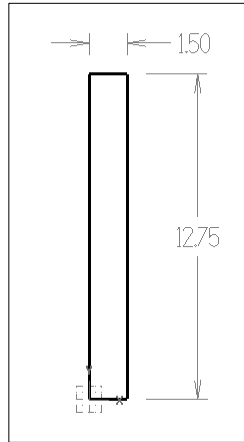
### Setting the toolbar states

- ✦ Before starting the geometry creation we should customize the toolbars to see **Setting the Toolbar States** to create the geometry and machine a 2D part. on page A-4 in the **User Notes**.
- ✦ Make sure that the **Grid** is enabled as it will show you where the part origin is. See **Setting the Grid** on page A-5
- ✦ **Operations Manager** to the left of the screen can be hidden to gain more space in the graphic area for design. Press **Alt + O** to hide it.
- ✦ Due to the fact that this drawing is symmetrical in the **Y**-axis, you will only draw 1/2 of the total part and use the mirror function to complete the part




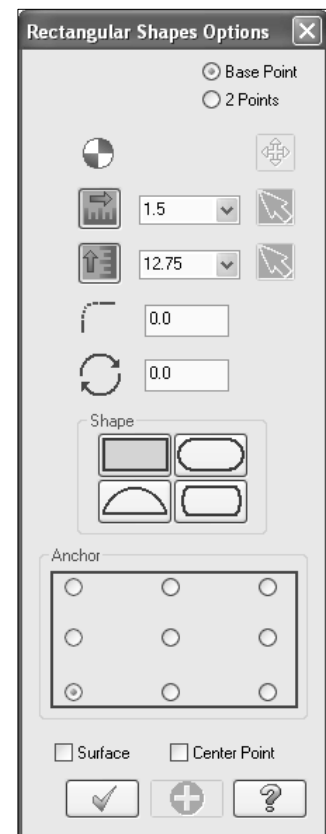
## STEP 1: CREATE A 1.5 X 12.75 RECTANGLE KNOWING THE WIDTH AND HEIGHT

Step Preview:



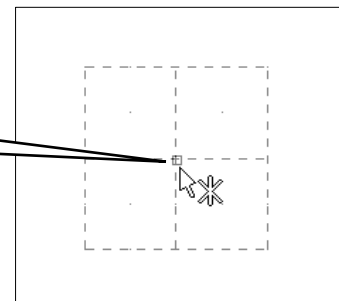
### Create

- ➔  **Rectangular Shapes**
- ➔ Enter the **Width** and the **Height** as shown in the following screenshot.
- ➔ Select the arrow to expand the **Rectangular Shapes Options** as shown.






- ➔ Select the lower left corner radio button as the anchor.
- ➔ [Select position for the base point]: Select the center location of the grid (the origin).

Select the origin



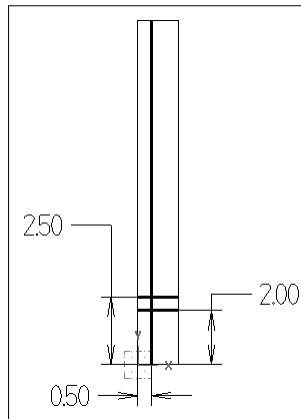
➤ Select the **OK** to exit **Rectangular Shapes Options** dialog box 

➤ Use the **Fit** icon to fit the drawing to the screen. 

➤ During the geometry creation of this tutorial, if you make a mistake, to undo the last step please use **Undo** button. You can undo as many steps as needed.  If you delete or undo a step by mistake, please use **Redo** button. 

## STEP 2: CREATE PARALLEL LINES (KNOWING THE SIDE AND THE DISTANCE BETWEEN THE LINES) TO ESTABLISH THE CENTER POINTS OF THE 0.500 RADIUS ARCS

*Step Preview:*



### Create

➤ **Line**


➤  **Parallel**

➤ [Select a line ] Select **Entity A**.

➤ [Indicate the offset direction ] Pick a point to the right of the selected line.

➤ Note that the color of the geometry is **cyan** which means that the entity is “alive” and you can still change the line parameters.


➤ Enter the **Distance**  **0.5** (Enter)

➤ Select apply button to continue with the same command 

➤ [Select a line]: Select **Entity B**

➤ [Indicate the offset direction]: Pick a point above the selected line.

➤ Type the **Distance**  **2.0** (Enter)

➤ Select apply button to continue with the same command 

➤ [Select a line]: Select **Entity B**

➤ [Indicate the offset direction]: Pick a point above the selected line.

➤ Type the **Distance**  **2.5** (Enter)

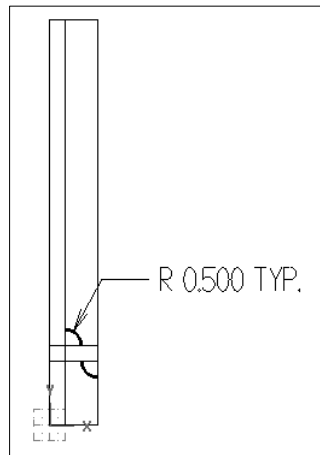
➤ Select the **OK** button. 

Entity A

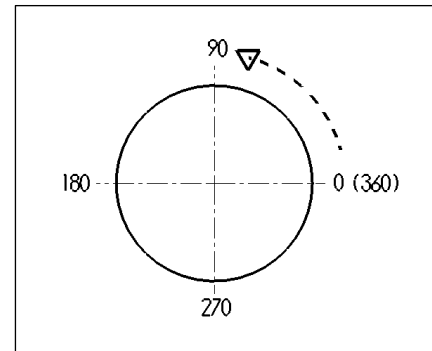
Entity B

### STEP 3: CREATE THE 0.5 RADIUS ARCS USING POLAR COMMAND (KNOWING THE CENTER POINT, RADIUS AND INITIAL ANGLE AND FINAL ANGLE)

*Step Preview:*



- ✦ To create a polar arc you have to know the radius of the arc, the initial angle and the final angle. Positive angles in Mastercam are measured in **CCW** direction as shown in the following diagram.



#### Create

➤ **Arc**

➤ **Arc Polar**

➤ Enter the **Radius** **0.5 (Tab)**

- ✦ To set the other parameters of the arc use Tab key. Note that the diameter value is automatically changed by the system based on the radius.

➤ Enter the **Start Angle** **0 (Tab)**

➤ Enter the **End Angle** **90 (Enter)**

➤ [Enter the center point]: Select **Point A** at the intersection as shown.

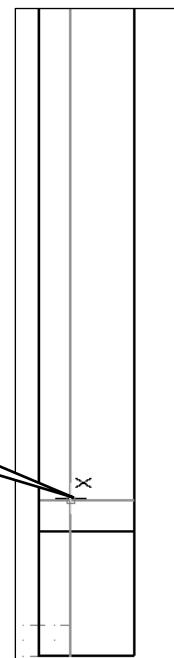
➤ Select the **Apply** button to continue using the same command.

➤ Enter the **Radius** **0.5 (Tab)**


➤ Enter the **Start Angle** **180 (Tab)**

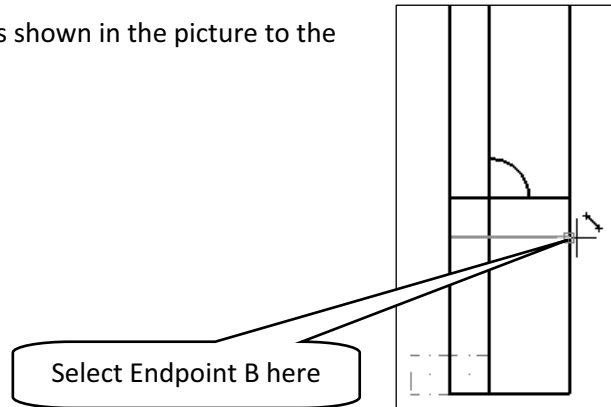
➤ Enter the **End Angle** **270 (Enter)**

Select Point A here




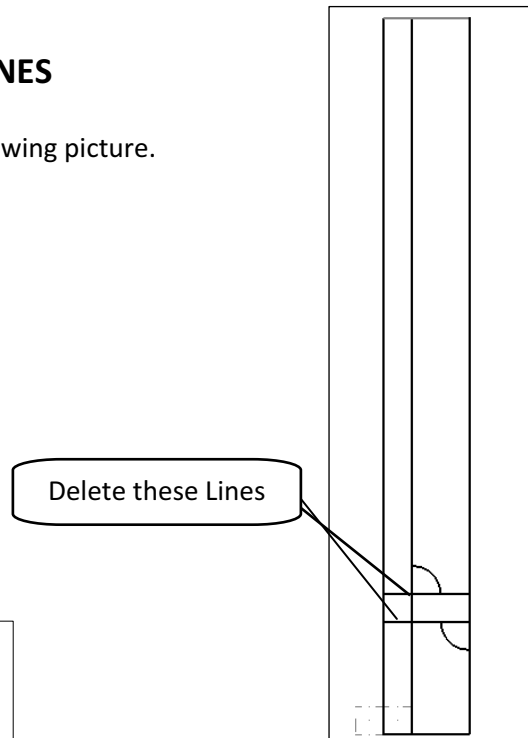
- ➔ [Enter the center point]: Select the **Endpoint B** as shown in the picture to the right.

- ➔ Select the **OK** button. 



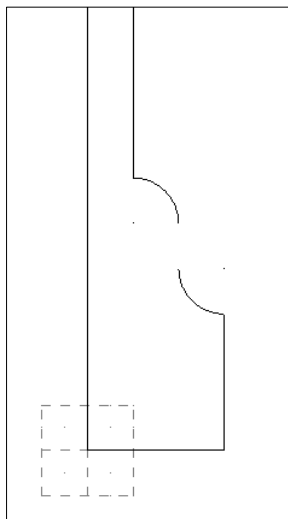
#### STEP 4: DELETE THE EXTRA CONSTRUCTION LINES

- ➔ Pre-select the two **horizontal** lines as shown in the following picture.
- ➔ Select the **Delete** entity icon. 




#### STEP 5: TRIM 2 ENTITIES USING DIVIDE

*Step Preview:*



**Edit**

- ➔ **Trim/Break**
- ➔  **Trim/Break/Extend**

➔ Select the **Divide** icon from the trim ribbon bar.



➔ [Select the curve to divide]: Select **Entity A**

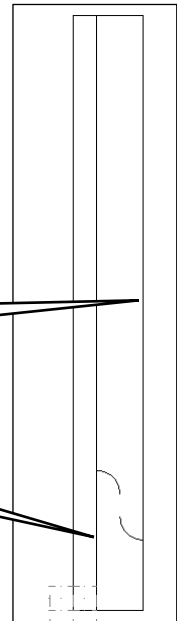
⚡ When using divide, select the entity on the side that you want to remove.

➔ [Select the curve to divide]: Select **Entity B**

➔ Select the **OK** button.

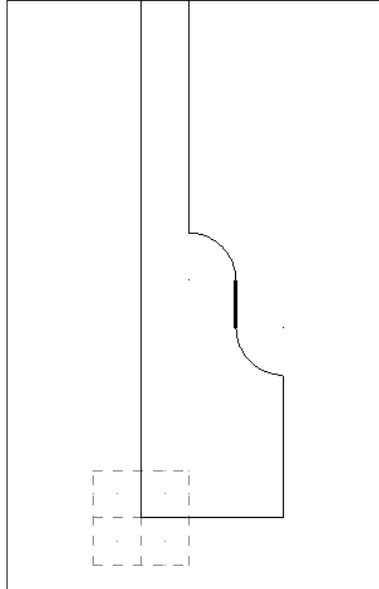
Select Entity B here

Select Entity A here



## STEP 6: CREATE A LINE KNOWING THE ENDPOINTS OF THE LINE

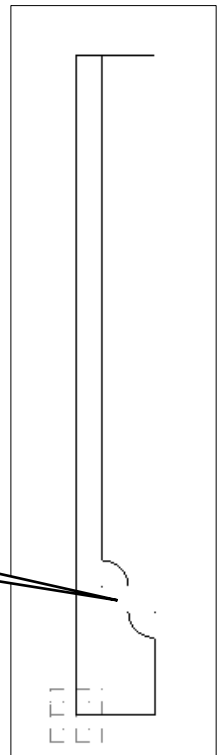
*Step Preview:*



➔ Select the **Zoom Target** icon.

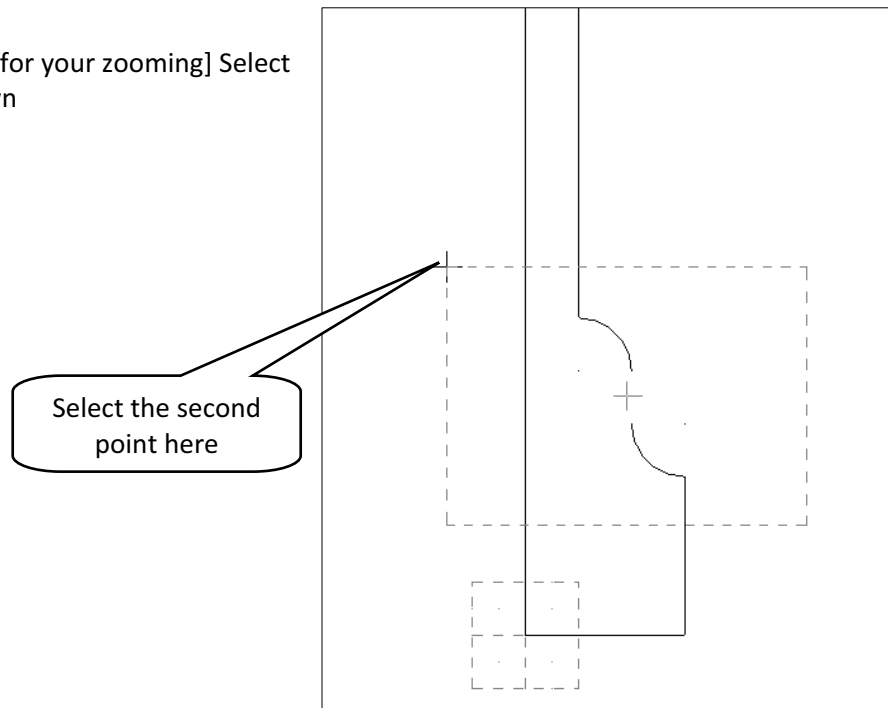
➔ [Pick point to zoom from]: Select a point as shown

Select a point here



- Drag the cursor to make a window around the part as shown with hidden lines.


- [Choose a second corner for your zooming] Select the second point as shown



## Create


- Line
-  Endpoint

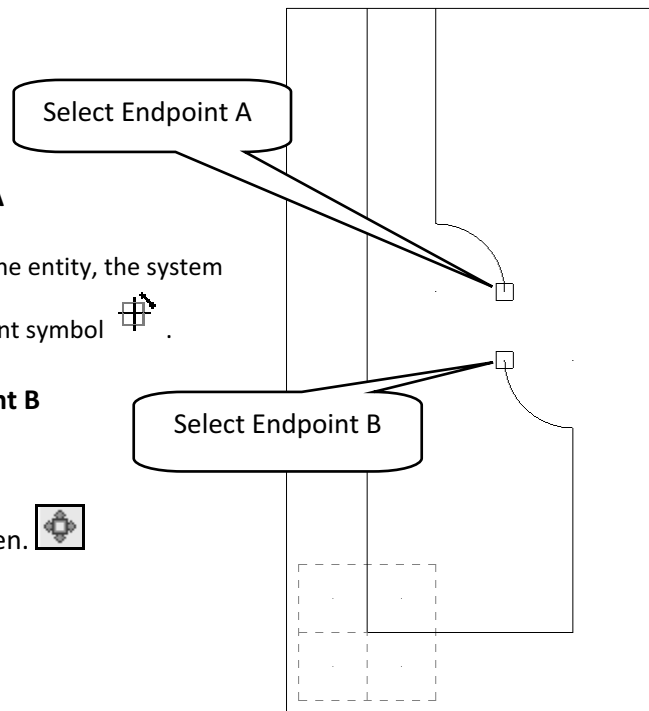
- [Specify the first endpoint]: Select **Endpoint A**

- By moving the cursor to the endpoint of the entity, the system will display a small square and the endpoint symbol .

- [Specify the second endpoint]: Select **Endpoint B**

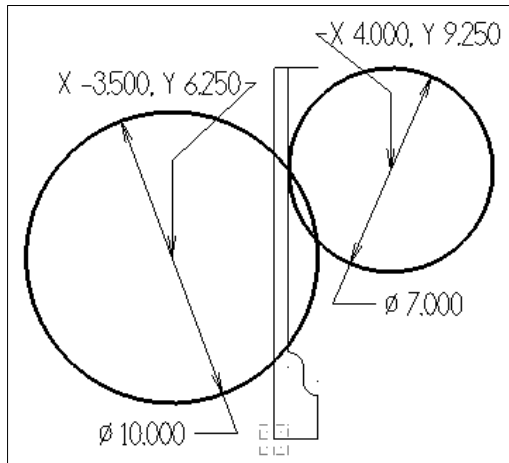
- Select the **OK** button. 

- Use the **Fit** icon to fit the drawing to the screen. 



## STEP 7: CREATE THE 5" RADIUS AND 3.5" RADIUS ARCS, KNOWING THE RADIUS AND THE CENTER POINT OF THE ARC

Step Preview:



Create

➤ Arc

➤ Circle Center Point

➤ Enter the **Radius** value 5.0 (Enter)

➤ [Enter the center point]: Select the **Fast point** icon and enter the coordinates: -3.5, 6.25 (Enter)

➤ The first coordinate value is the X-coordinate of the point. The second coordinate value is the Y-coordinate of the point. The values are measured from the geometry origin, and they are separated by a comma.

➤ Select the **Apply** button to continue using the same command.

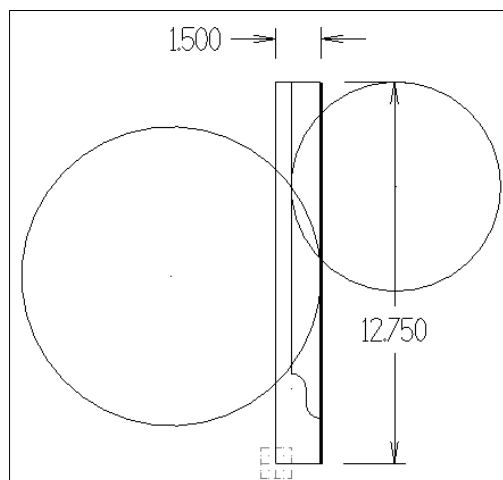
➤ Enter the **Radius** value 3.5(Enter)

➤ [Enter the center point]: Select the **Fast point** icon and enter the coordinates: 4.0, 9.25

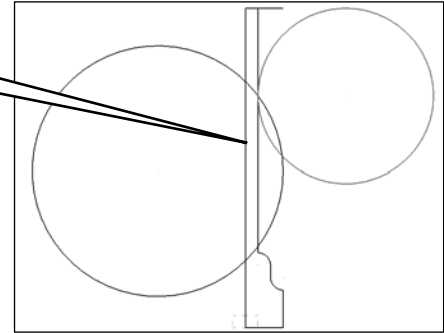
➤ Select the **OK** button to exit the command.

## STEP 8: CREATE A PARALLEL LINE KNOWING THE SIDE AND THE DISTANCE TO COMPLETE THE TOP GEOMETRY

Step Preview:



Select Entity A



### Create

➤ Line

➤  Parallel

➤ [Select a line]: Select **Entity A**.

➤ [Indicate the offset direction]: Pick a point to the right of the selected line.

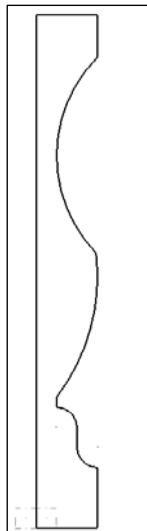
➤ Note that the color of the geometry is cyan which means that the entity is “alive” and you can still change the line parameters.

➤ Enter the **Distance**  1.5 (Enter)

➤ Select the **OK** button. 

## STEP 9: TRIM 2 ENTITIES UP TO THEIR INTERSECTION POINT SIMULTANEOUSLY

*Step Preview:*



➤ Trimming can result in either trimming or extending up to the intersection point. Always select the entities to trim on the side that you want to keep after trimming.

### Edit

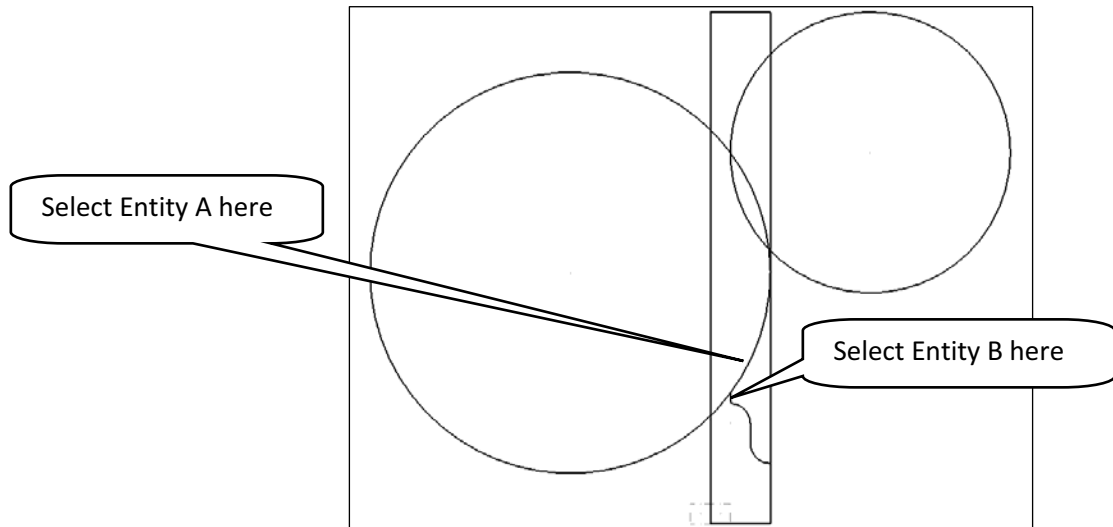
➤ Trim/Break

➤  Trim/Break/Extend

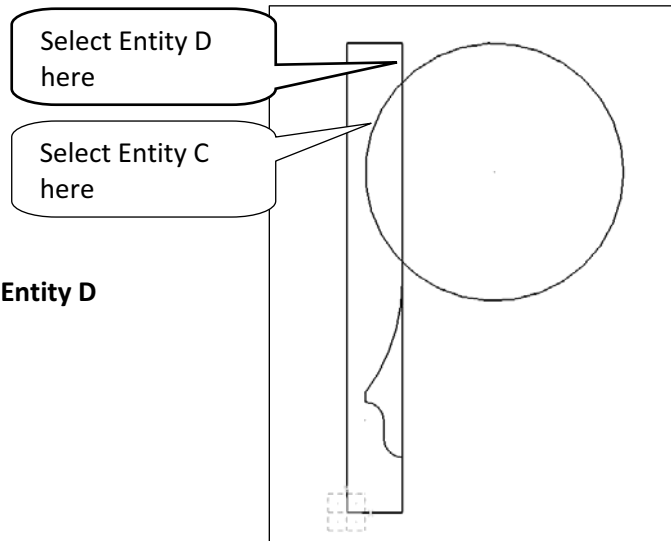
- Select the **Trim 2 Entities**



- [Select entity to trim/extend]: Select **Entity A**
- [Select the entity to trim/extend to]: Select **Entity B**

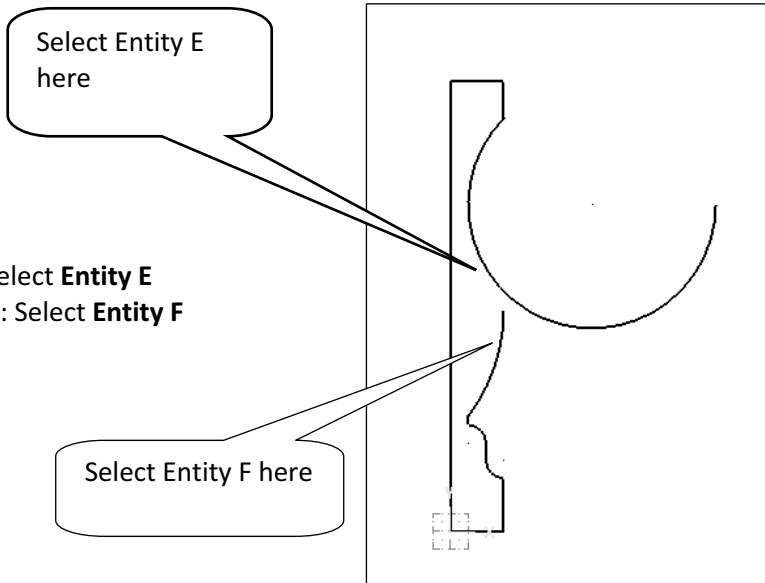




- [Select the entity to trim/extend]: Select **Entity C** (make sure that the arc is highlighted)



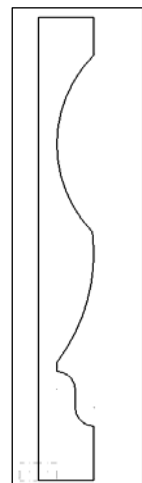
- [Select the entity to trim/extend to]: Select **Entity D**

- [Select the entity to trim/extend]: Select **Entity E**
- [Select the entity to trim/extend to]: Select **Entity F**



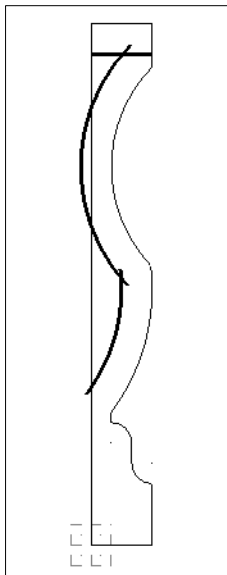
- Select the **OK** button. 
- Use the **Fit** icon to fit the drawing to the screen. 

*The part should look as shown to the right.*



## STEP 10: OFFSET THE ENTITIES TO CREATE THE INSIDE SHAPES

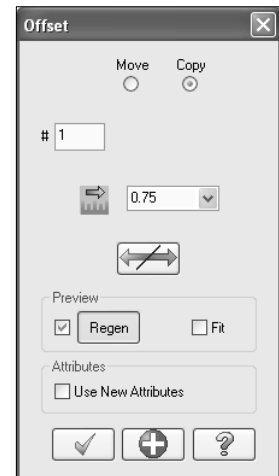
*Step Preview:*



**Xform**

➔  **Offset**

- ➔ Make the changes as shown in the following screen shot. (Enable **Copy** and change the offset distance to **0.75**)

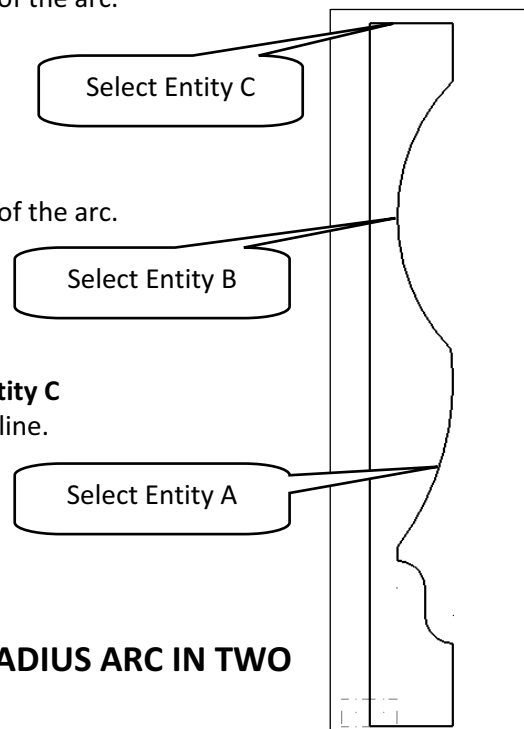


- ➔ [Select the line, arc, spline or curve to offset]: Select **Entity A**
- ➔ [Indicate the offset direction]: Select a point to the left of the arc.

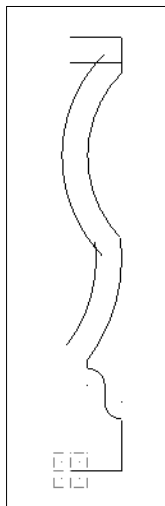
- ➔ [Select the line, arc, spline or curve to offset]: Select **Entity B**
- ➔ [Indicate the offset direction]: Select a point to the left of the arc.

- ➔ [Select the line, arc, spline or curve to offset]: Select **Entity C**
- ➔ [Indicate the offset direction]: Select a point below the line.

- ➔ Select the **OK** to exit **Offset** dialog box 



**STEP 11: BREAK THE OFFSET ARC OF THE 3.5 RADIUS ARC IN TWO PIECES**




- ✦ The offset arc is used to create two separate pockets. So we have to break it in two pieces.

## Edit

- ➔ Trim/Break

- ➔  Trim/Break/Extend

- ➔ Select Trim to Point 

- ➔ Enable the **Break** button. 

- ➔ [Select entity to break/extend]: Select **Entity A**

- ➔ [Indicate the break/extend location]: Select the **Midpoint of the arc** as shown in the picture.

Select Entity A

Select the Midpoint of the Arc

- ➔ Select the **OK** button. 

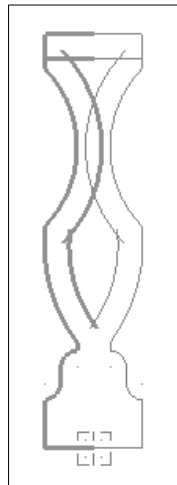
- ➔ Pre-select the vertical line as shown in the following picture.

- ➔ Select the **Delete** entity icon. 

Select this Vertical Line

## STEP 12: TRANSFORM THE GEOMETRY TO REPRESENT THE WHOLE PART

*Step Preview:*



### Xform



**Mirror**

➤ [Mirror: select

entities to mirror]: Select **All** button



➤ Select the **OK** button to exit **Select All** dialog box.



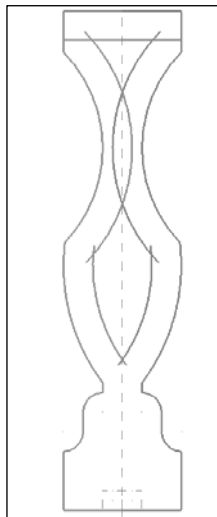
➤ Select the **End Selection** button.



➤ Make the changes in the Mirror dialog box as shown in the following screenshot.

*The part should look as shown below.*

=



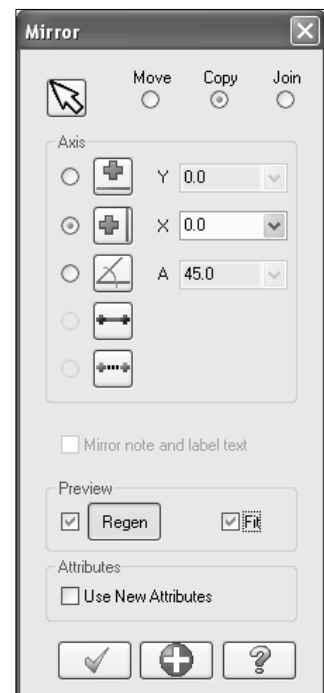
➤ Select the **OK** button to exit **Mirror** dialog box.



### Screen

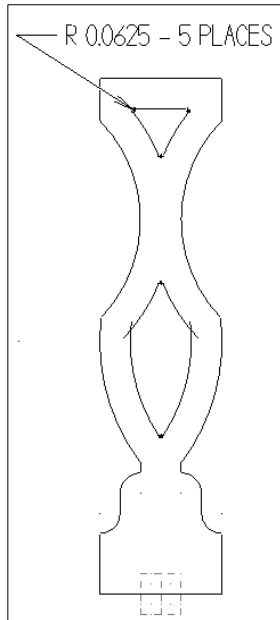


**Clear Colours**



## STEP 13: FILLET THE POCKETS WITH A .0625 RADIUS

Step Preview:



### Create

➤ **Fillet**

➤ **Entities**

➤ Enter the fillet **Radius** **0.0625** (Enter)

➤ [Select an entity] Select **Entity A**

➤ [Select another entity] Select **Entity B**

➤ [Select an entity] Select **Entity B**

➤ [Select another entity] Select **Entity C**

➤ [Select an entity] Select **Entity C**

➤ [Select another entity] Select **Entity A**

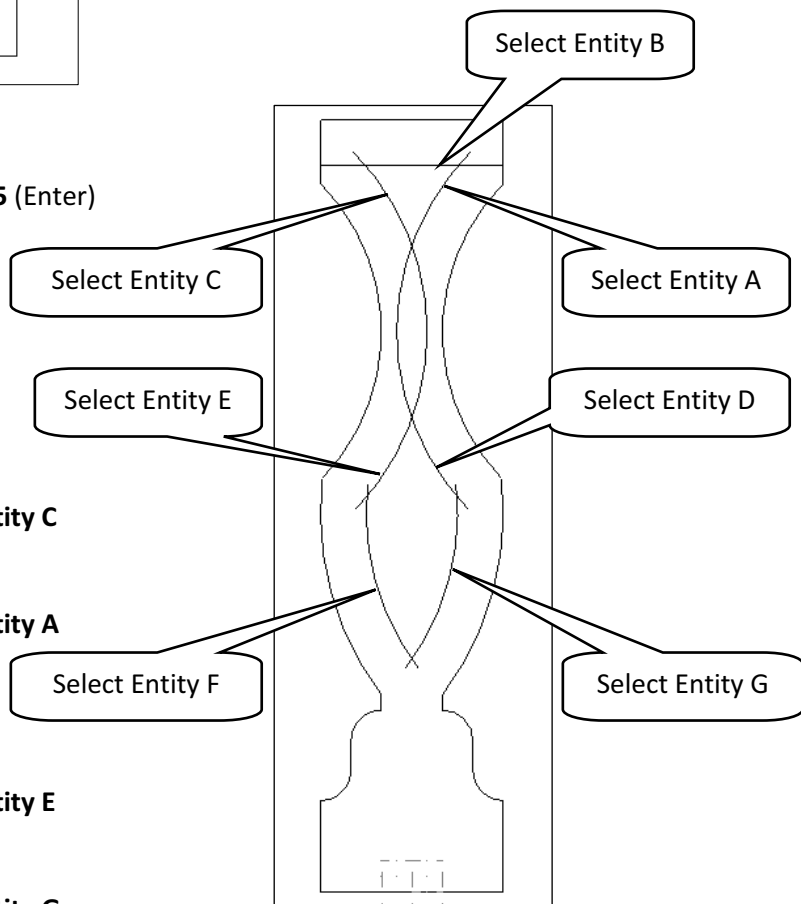
➤ [Select an entity] Select **Entity D**

➤ [Select another entity] Select **Entity E**

➤ [Select an entity] Select **Entity F**

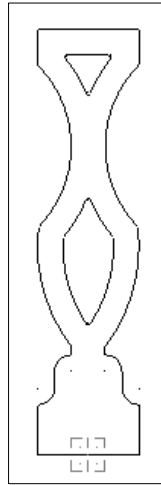
➤ [Select another entity] Select **Entity G**

➤ Select the **OK** button to exit.



## STEP 14: TRIM SIMULTANEOUS 2 ENTITIES UP TO THEIR INTERSECTION POINT

Step Preview:



### Edit

➤ Trim/Break

➤  Trim/Break/Extend

➤ Select the **Trim 2 Entities**



➤ Enable the **Trim** button.



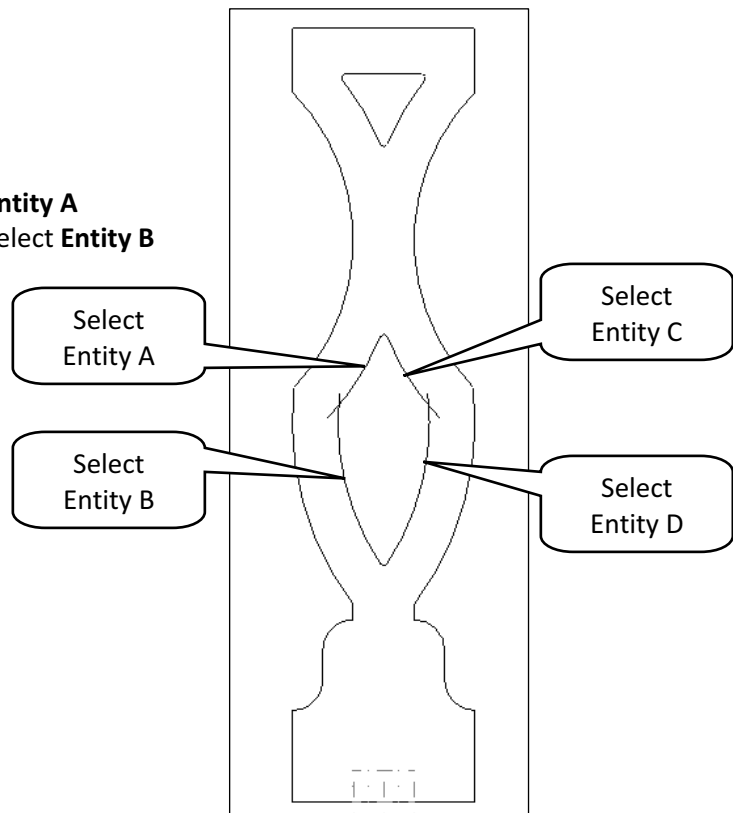
➤ [Select entity to trim/extend]: Select **Entity A**

➤ [Select the entity to trim/extend to]: Select **Entity B**

➤ [Select entity to trim/extend]: Select **Entity C**

➤ [Select the entity to trim/extend to]:  
Select **Entity D** Trim

➤ Select the **OK** button to exit.



## STEP 15: SAVE THE FILE

### File

➤  Save as

➤ **File name:** "Your Name\_2"

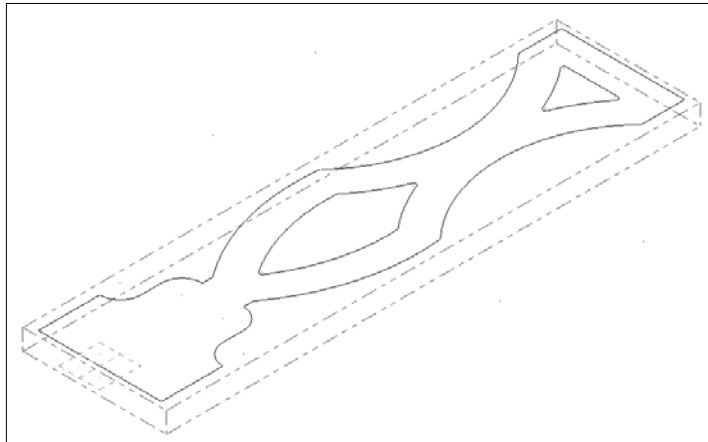
➤ Select the **Save** button.



## TOOLPATH CREATION

### STEP 16: SET UP THE STOCK TO BE MACHINED

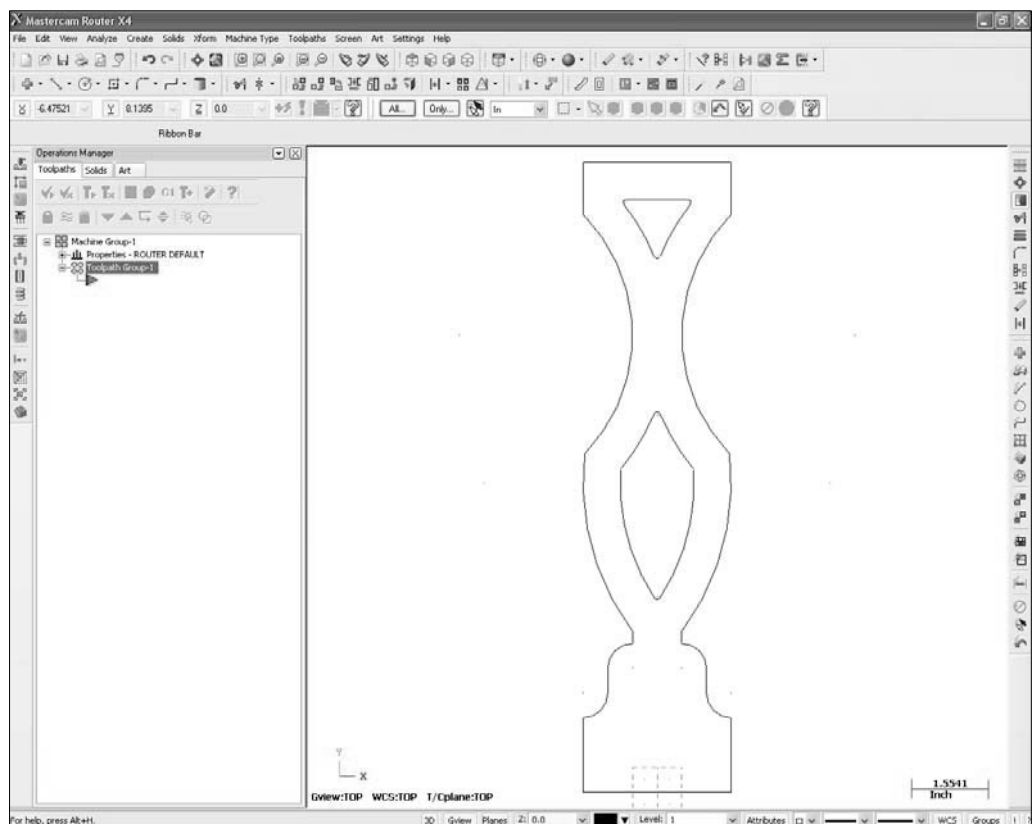
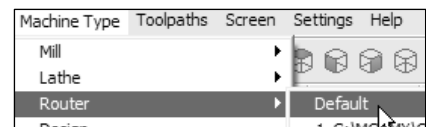
Step Preview:




➔ To display the **Toolpaths Operation Manager** press Alt + O.

#### Machine type

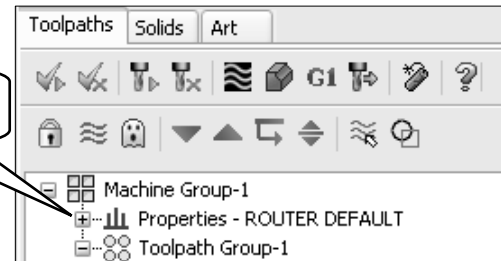
- ➔ Router
- ➔ Default



➔ Use the **Fit** icon to fit the drawing to the screen. 

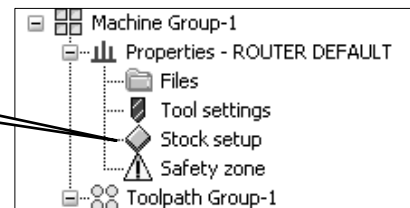
➔ Select the plus sign in front of **Properties** to expand the **Toolpaths Group Properties**.

Select the Plus



➔ Select **Stock setup**.

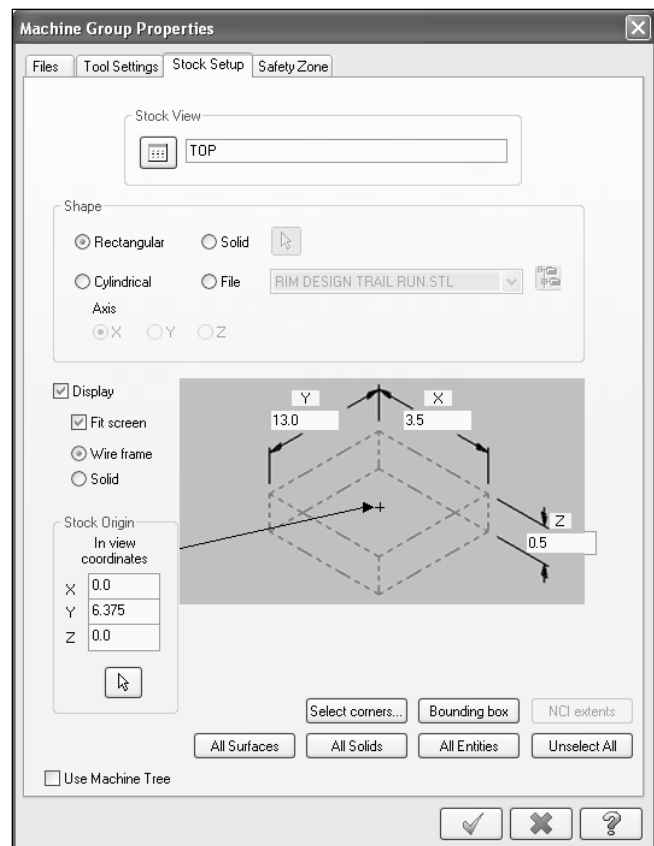
Select Stock Setup



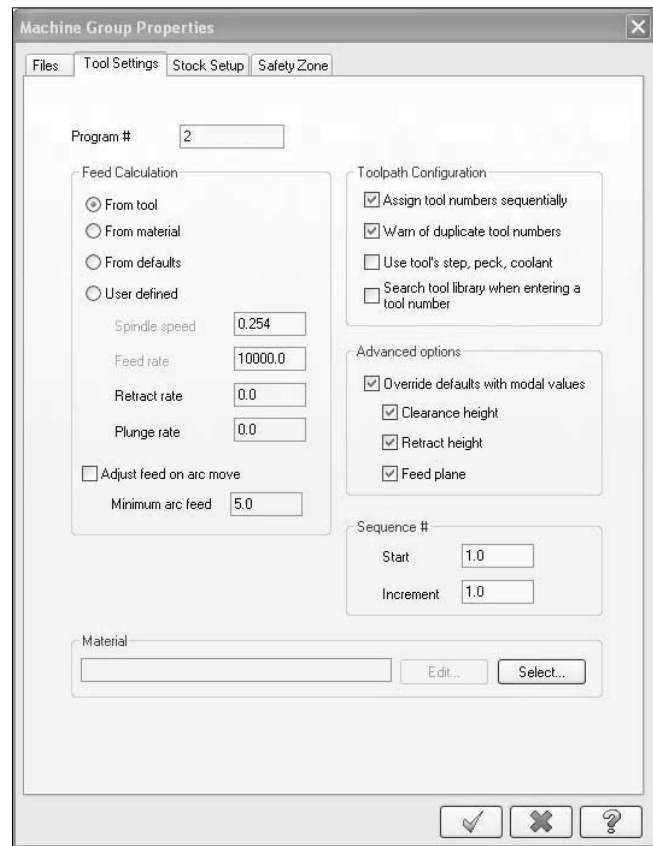
➔ Change the parameters to match the screenshot to the right.

The **Stock Origin** values adjust the positioning of the stock, ensuring that you have equal amount of extra stock around the finish part.

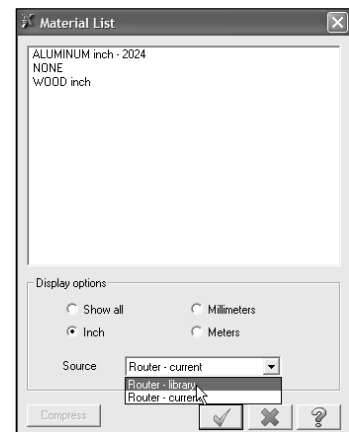
**Display** options allow you to set the stock as **Wireframe** and to fit the stock to the screen. (**Fit Screen**)



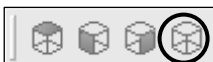
- ➔ Select the **Tool Settings** tab to set the Toolpath parameters and the part material.
- ➔ Change the parameters to match the following screenshot.
- ➔ Click on the **Select** button.



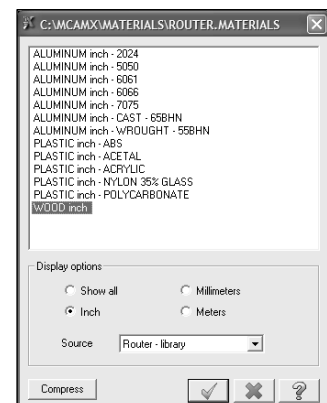
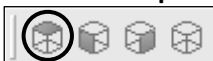
- ➔ Change the **Source** to **Router library**.



- ➔ Select the **Wood inch**.
- ➔ Select the **OK** button to exit the library.
- ➔ Select the **OK** button to exit **Toolpath Group Properties**.
- ➔ Select the **Isometric View** from the view toolbar to see the stock.

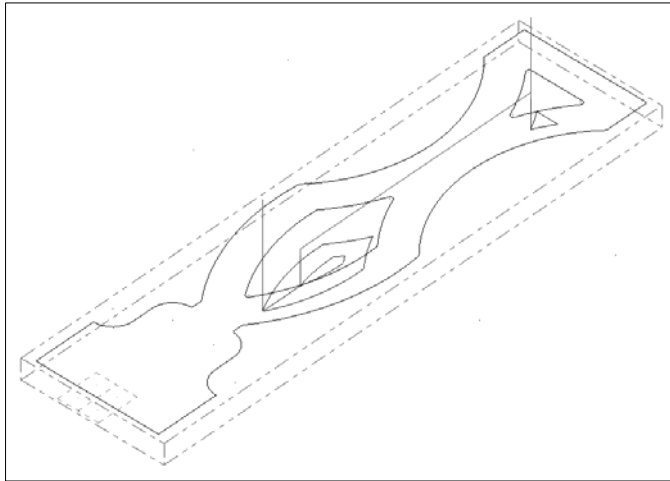


- ➔ Select the **Top View** from the view toolbar to see the part from top.




## STEP 17: POCKET THE INSIDE PART USING ½" STRAIGHT BIT

Toolpath Preview:

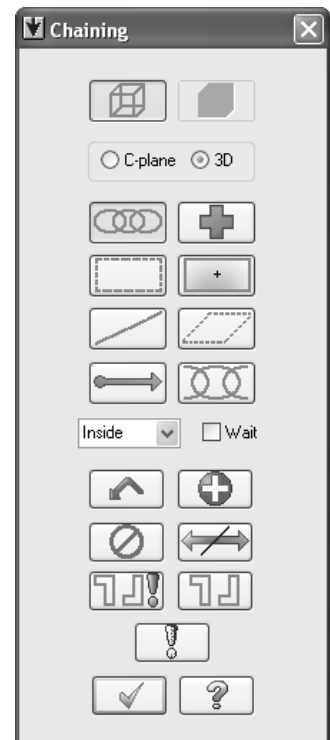
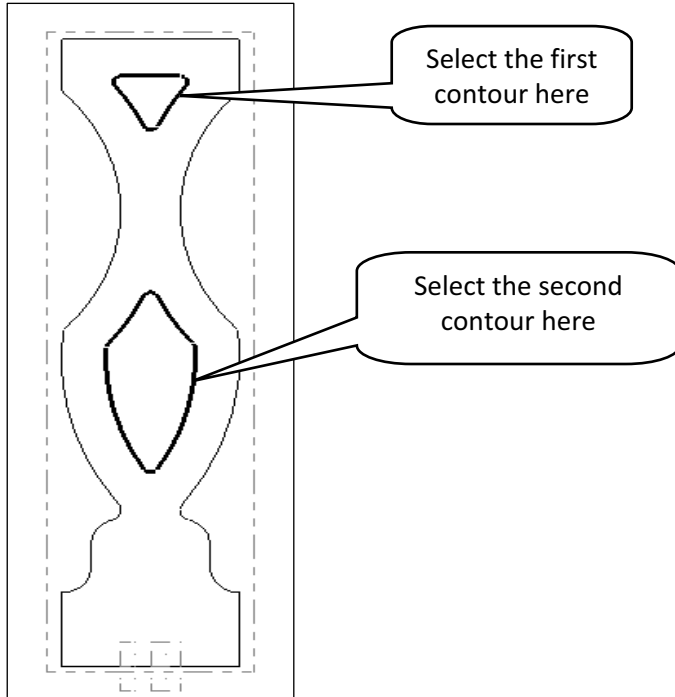
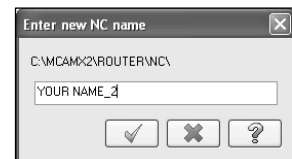


### Toolpaths

#### ➤ **Pocket**

➤ Select the **OK** button to accept the NC name. 

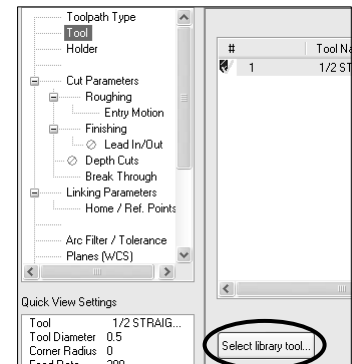
➤ Select the pocket chains as shown.



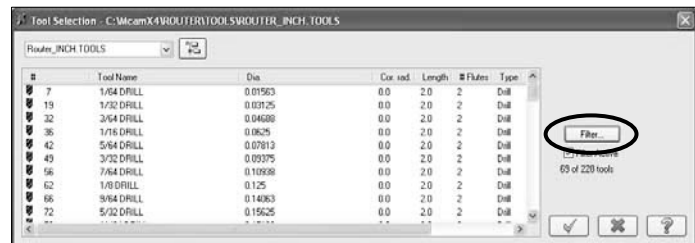
➤ Select the **OK** button to exit **Chaining**. 

➤ Select the **Tool** menu.

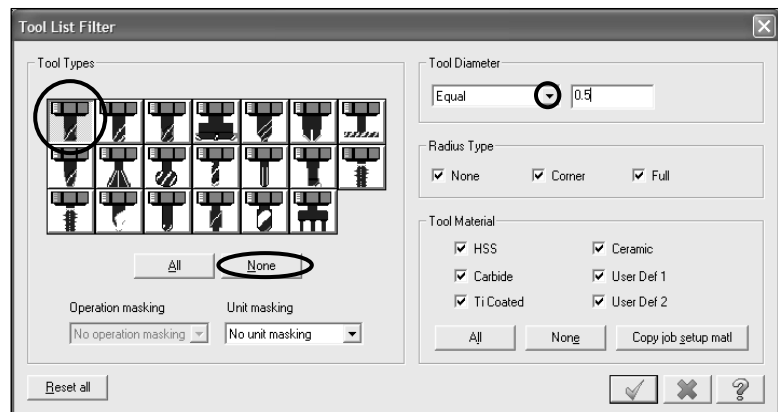
- ➔ Click on the **Select library tool** button.





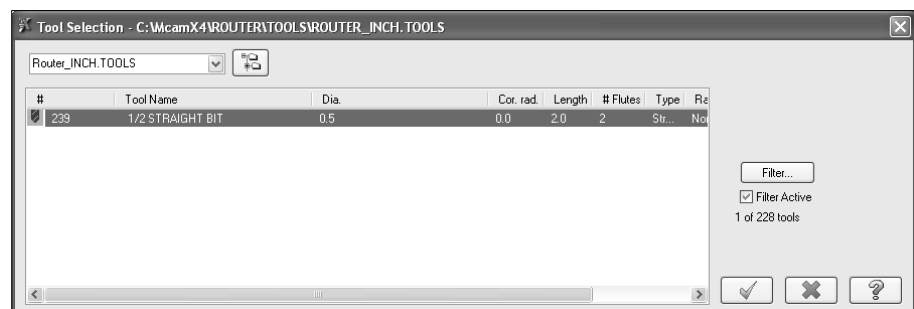
- ➔ Select the **Filter** button.



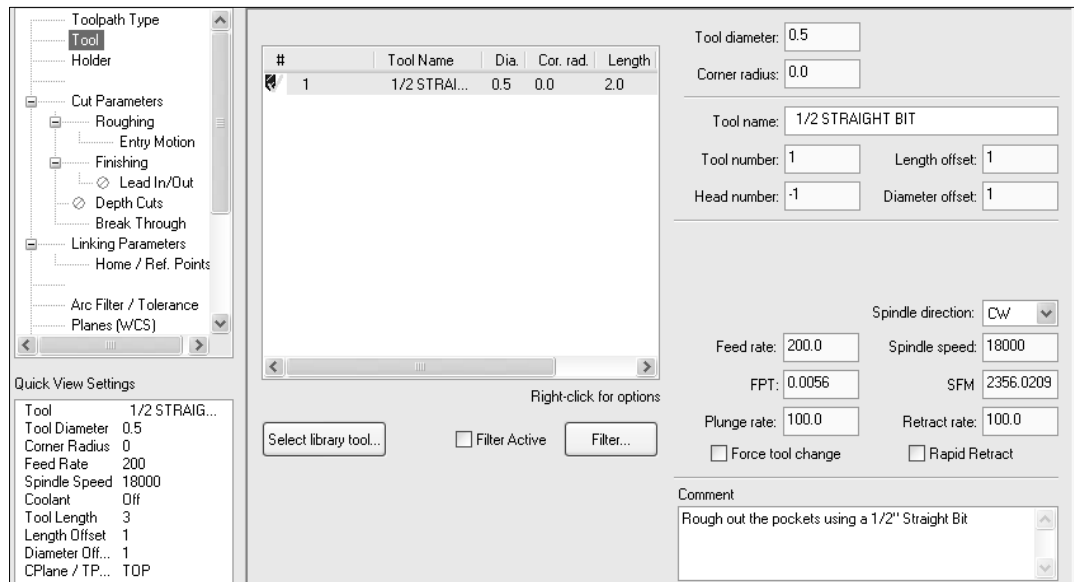
- ➔ Select the **None** button to disable any previous tool selection as shown.
- ➔ Select the **Straight** in the **Tool Types** list.
- ➔ Select the **drop down arrow** in the **Tool Diameter** field and select **Equal**.
- ➔ Enter 0.5 in the **Tool Diameter** value box.



- ➔ Select the **OK** button to exit **Tool List Filter**. 
- ➔ Make sure that the tool is selected (highlighted) in the **Tool Selection** window.
- ➔ Select the **OK** button to exit **Tool Selection**. 

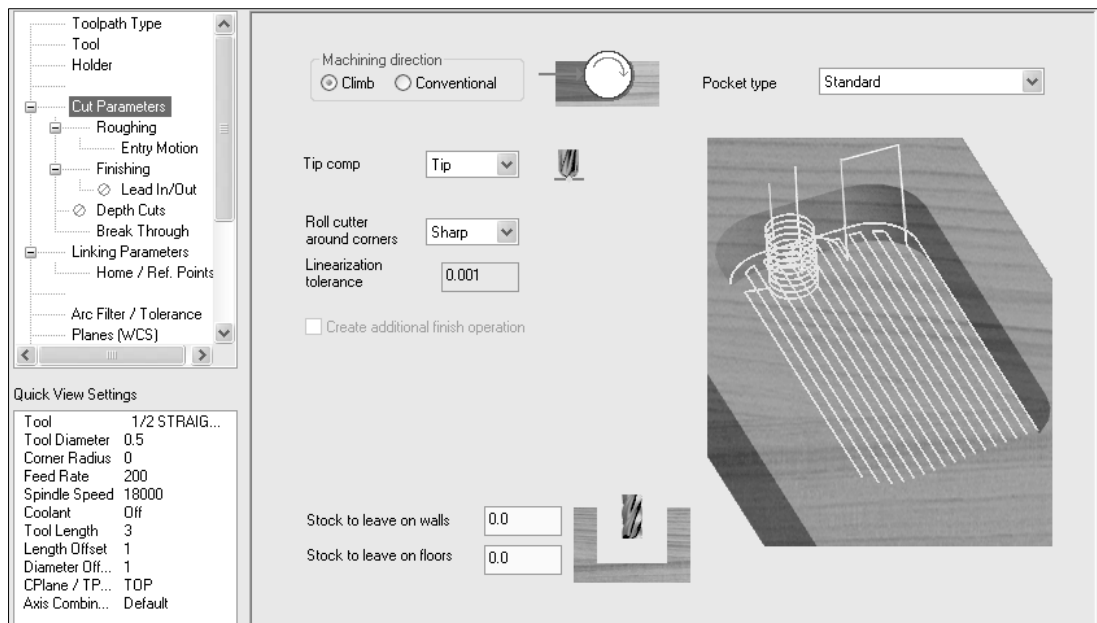


- ➔ Make the changes to match the following screenshot.



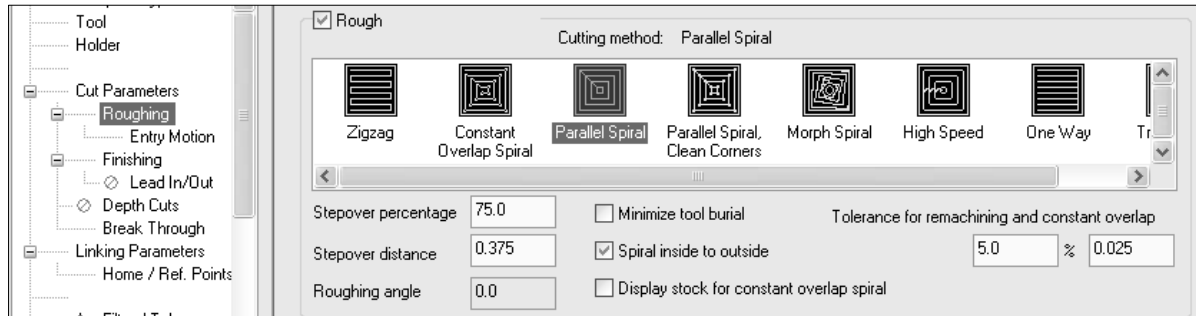
- ➔ The Tool page allows you to select the tool used in this operation. It also allows you to change the Spindle speed, the Feed rate, Plunge rate and Retract rate. You can insert a comment that will be output in the NC file after running the post processor.

- ➔ Select the **Cut Parameters** menu and make any changes as shown in the following screen shot.



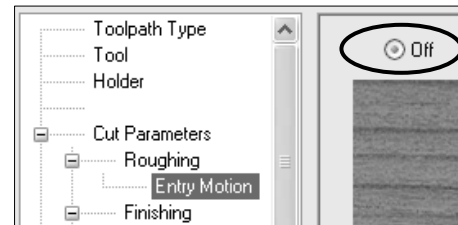
- ➔ The **Pocket parameters** dialog box allows you to establish the heights for rapid movement **Clearance** and **Retract**; the height from where the tool moves with feedrate **Feed plane**; the **Top of stock** and the final depth (**Depth**). You can use **Break through** amount to cut deeper than the final depth. You can also establish the **Machining direction** and the **Pocket type**. You can leave stock on the walls (**XY stock to leave**) or on the floor (**Z stock to leave**) that will require another operation to be removed.

- ➔ Select **Roughing** and change the cutting method and stepover percentage.

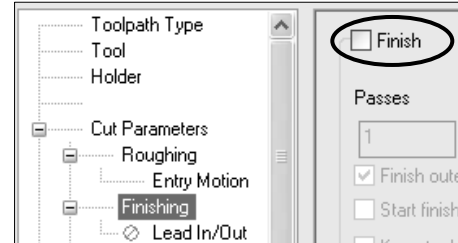


- ➔ The **Roughing** parameters allows you to establish the **Cutting method**, the **Stepover distance**, the cutting method option and to specify **Spiral inside to outside** if you desire.

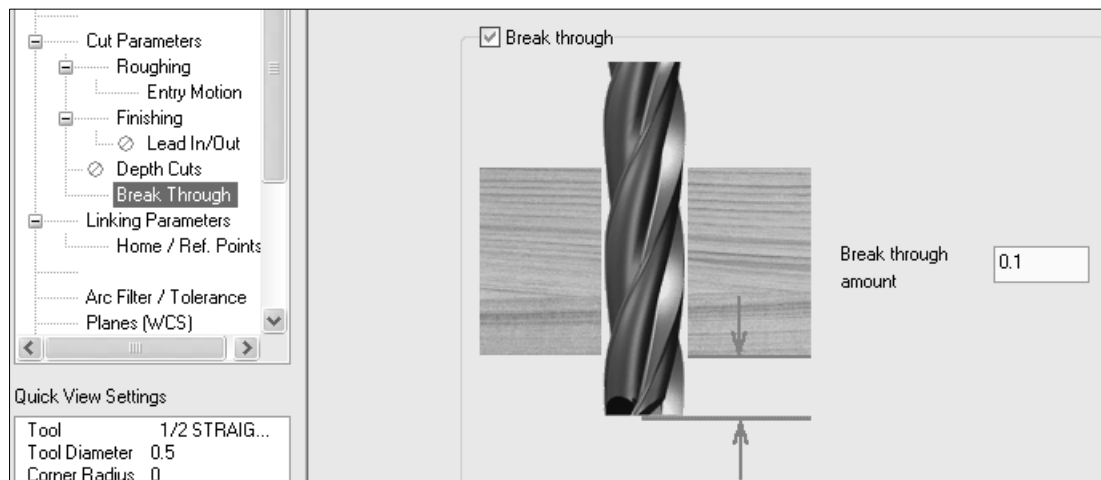
- ➔ Select **Entry motion** and Set this to **Off**.



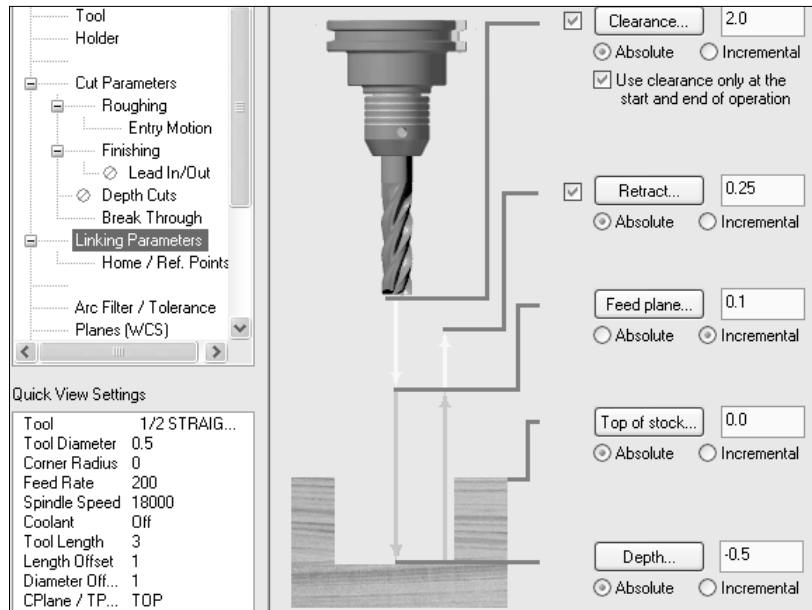
- ➔ Select **Finishing** and disable it.



- ➔ Select and enable **Break through**. Set the break through amount to 0.1". This makes the cut deeper than the final depth to prevent any tabs remaining attached to the part.



- ➔ Change the settings as shown below in the **Linking Parameters**.

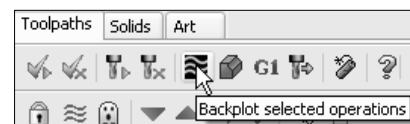


- ➔ Select the **OK** button to exit the **Pocket Toolpath Parameters**.



## STEP 18: CHECK THE TOOLPATH USING BACKPLOT

- ➔ Click on the **Toolpaths Manager** tab.
- ➔ Select **Backplot selected operations** button.



- ➔ Make sure that you have the following buttons selected. (They look pushed-down)

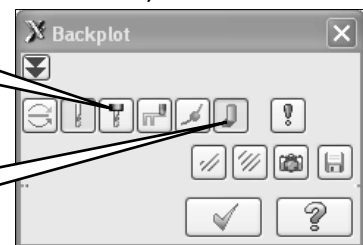
- ➔ Enable **Display tool**

Display Tool

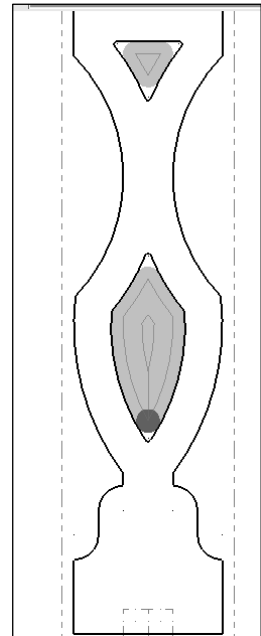
- ➔ Enable **Quick verify**

Quick Verify

- ➔ Select **Play** button.

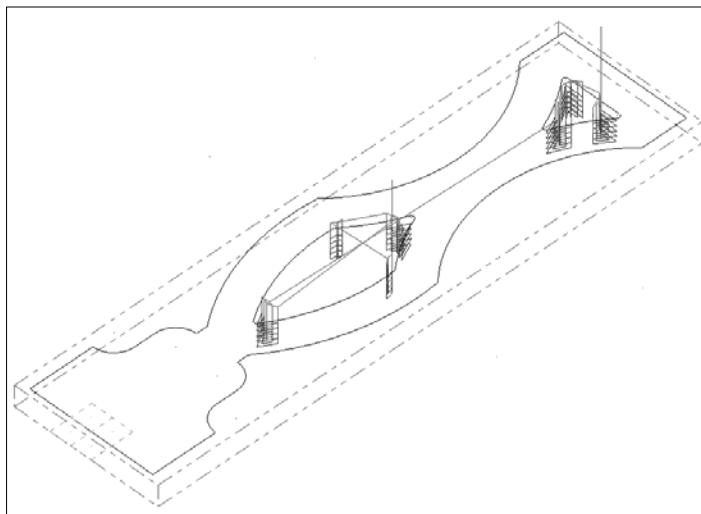


➤ Select the **OK** button to exit **Backplot**.



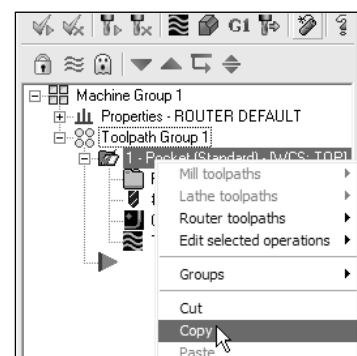
## STEP 19: REMACHINE THE POCKETS USING 1/8" STRAIGHT BIT

*Toolpath Preview:*

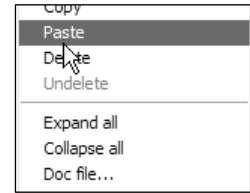


➤ The Remachining pocket operation allows you to cut areas where the previous tool diameter did not fit. We are going to copy the existing pocket operation in the **Toolpaths Manager** and modify the second pocket **Parameters**.

- Select the **Toolpaths** tab
- Right-mouse click on the pocket and select **Copy**



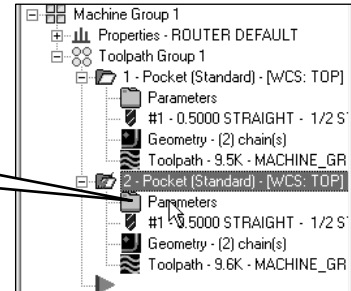
- ➔ Right-mouse click below the pocket, and select **Paste**.



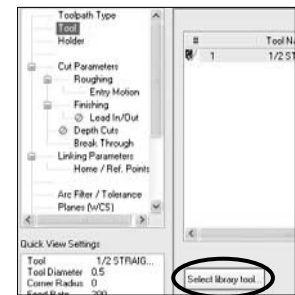
- ✦ We are going to use a 1/8" **Straight Bit** tool to remove the material only in the area where the previous tool did not fit.

- ➔ To change the tool and the parameters for remachining, select **Parameters** in the second operation.

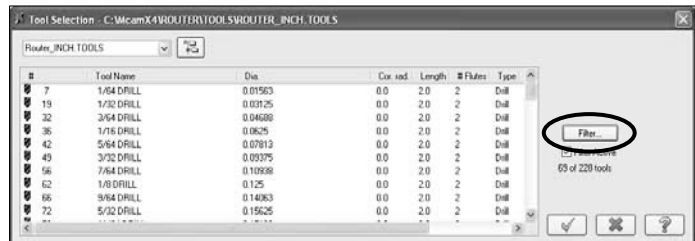
Select Parameters



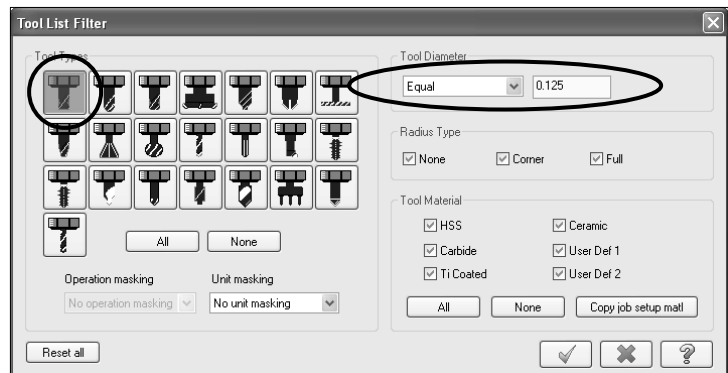
- ➔ Select the **Tool** menu.
- ➔ Click on the **Select library tool** button.



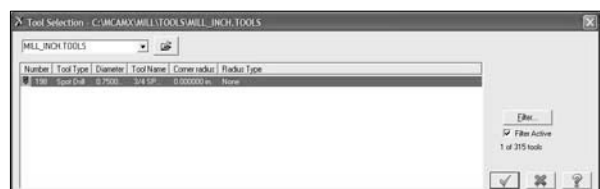
- ➔ Select the **Filter** button.




- ➔ Select **Straight** in the **Tool Types** list.
- ➔ Enter 0.125 in the **Tool Diameter** value box.
- ➔ Select the **OK** button to exit **Tool List Filter**.

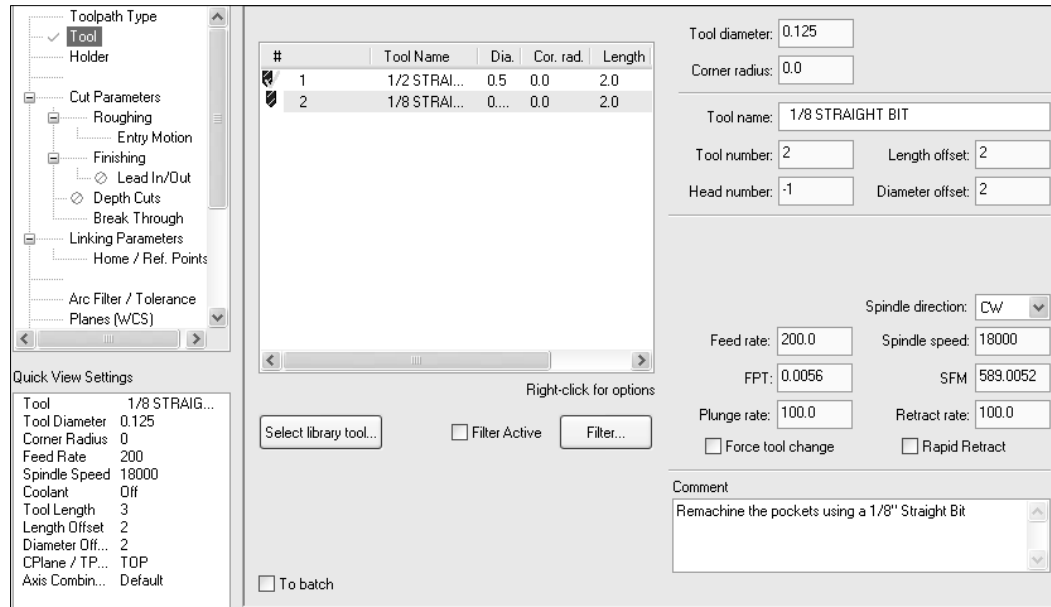


- ➔ Make sure that the tool is selected (highlighted) in the **Tool Selection** window.

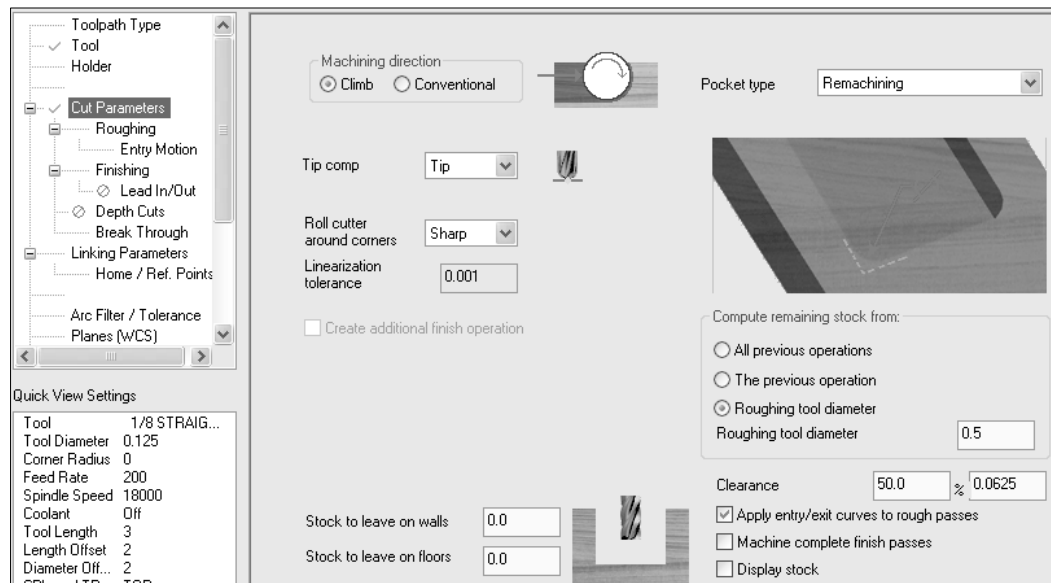


➤ Select the **OK** button to exit **Tool Selection**. 

➤ Make the changes to match the following screenshot.



➤ Select the **Cut Parameters** and change the pocket type to **Remachining** and specify a roughing tool diameter.

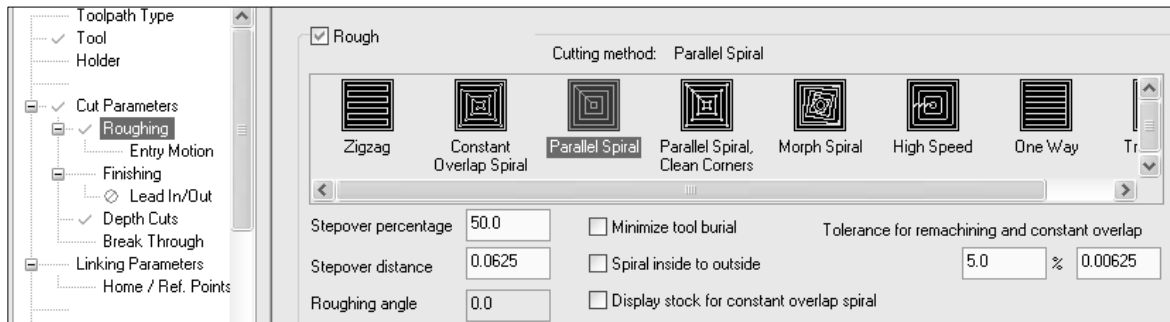


➤ Compute remaining stock from roughing tool diameter enables the system to calculate the area for remachining based on the size of the **Roughing tool diameter**.

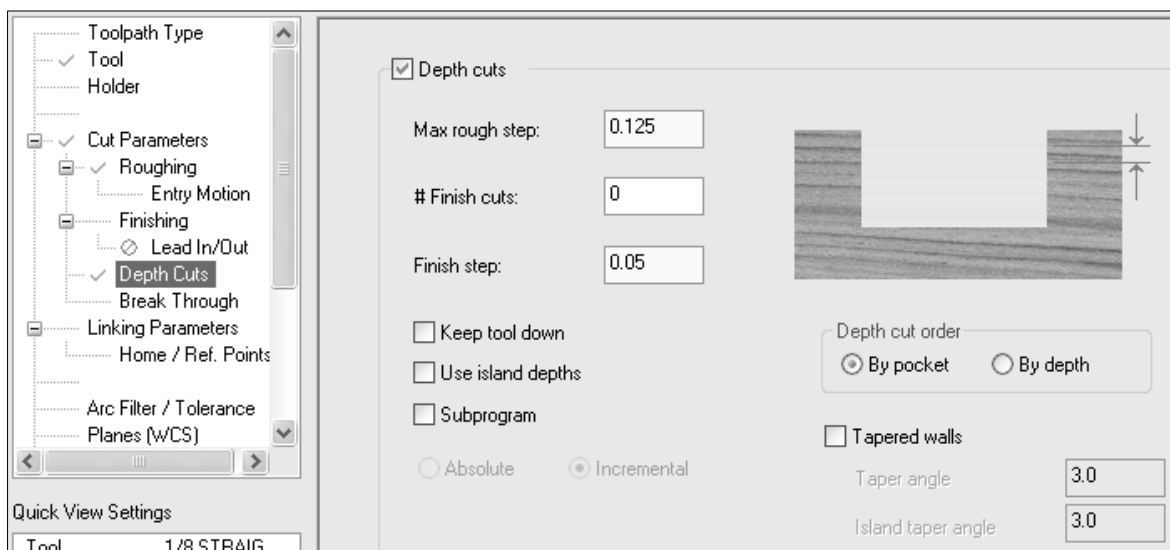
➤ **Clearance** extends the entry and exit area for remachining to prevent any remaining cusps.

➤ **Applying entry/exit curves** will ensure that the tool will have a smooth entry/exit from an already machined area.

- Select the **Roughing** menu and make the following changes.



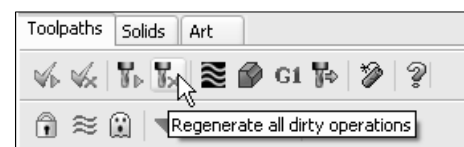
- Select the **Depth Cuts** menu and enable it. Change the maximum rough step to **0.125**.



- Select the **OK** button to exit pocket parameters.

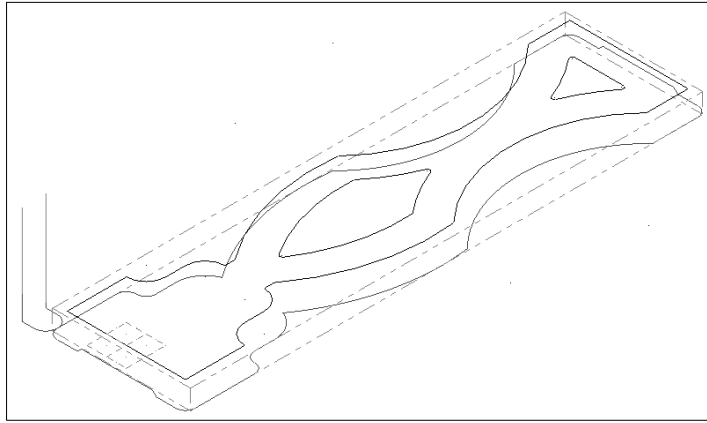
- Select the **Regen all dirty operations** button to recalculate the toolpath taking in account the changes that you made.

- Repeat **Step 18 page 2-26** if you want to verify the remachining toolpath using **Backplot**.



## STEP 20: CONTOUR THE OUTSIDE PART USING ½" STRAIGHT BIT

*Toolpath Preview:*



### Toolpaths



#### Contour

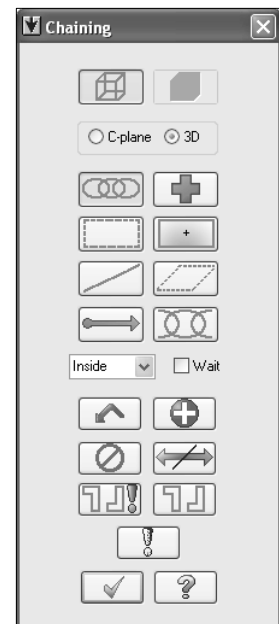
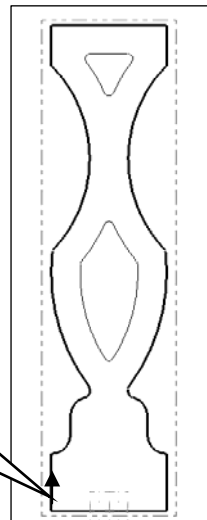
- Select the first entity in the contour, as shown.

Be sure to chain the contour in a **CW** direction.

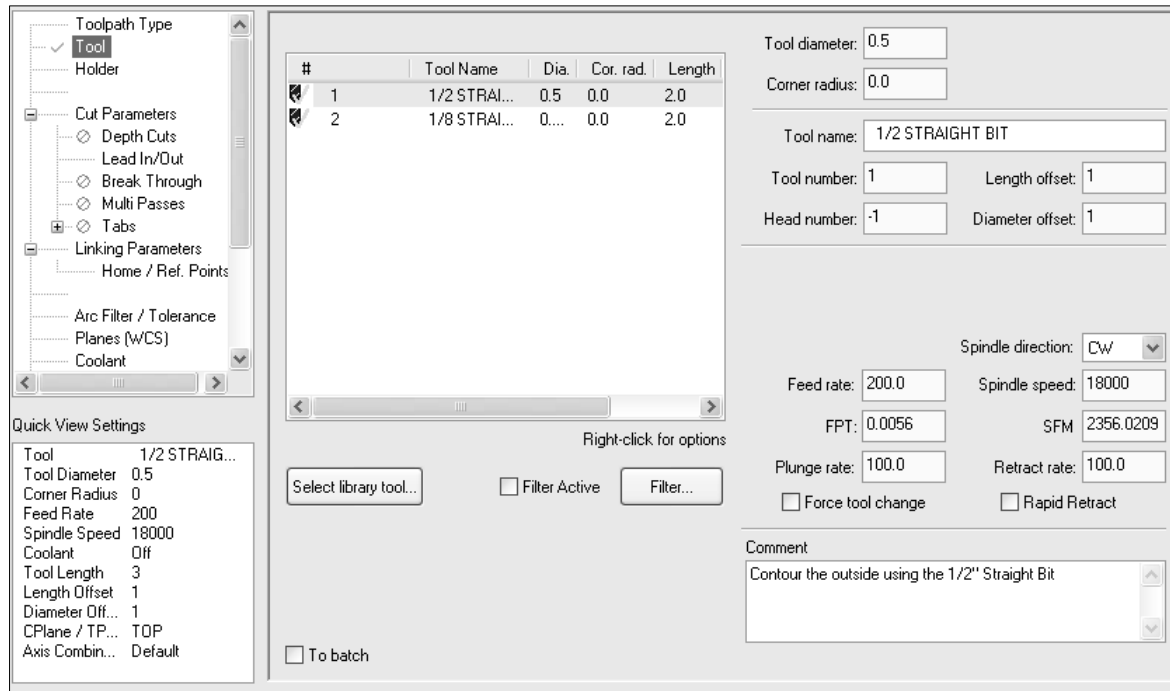
- Otherwise select the **Reverse** button from the **Chaining Dialog** box.

- Select the **OK** button to exit **Chaining**.

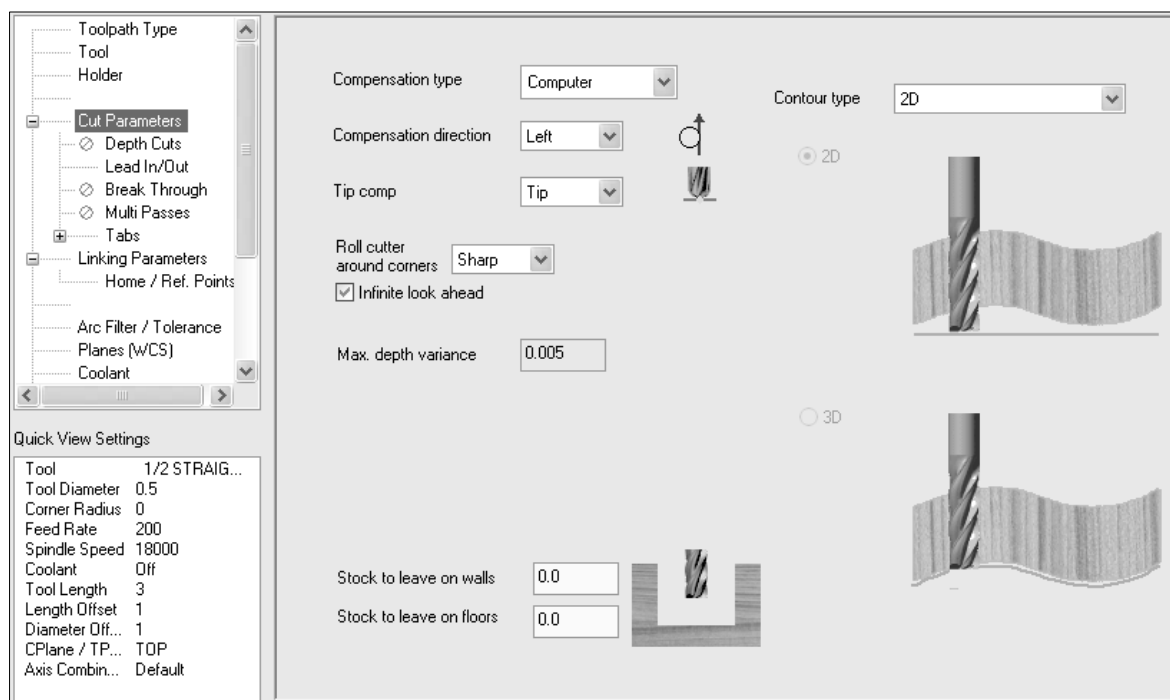
Select the Contour here



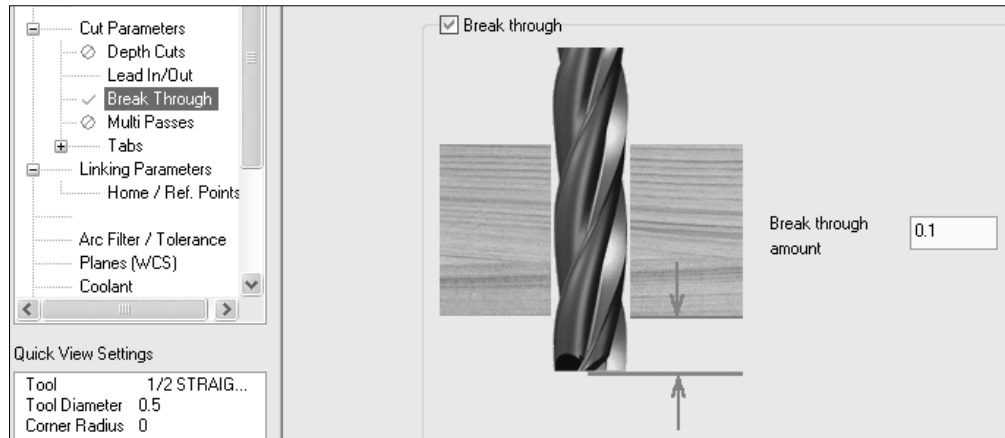
- Select the **Tool** menu
- Select the existing 1/2" Straight Bit and make any necessary changes as shown:



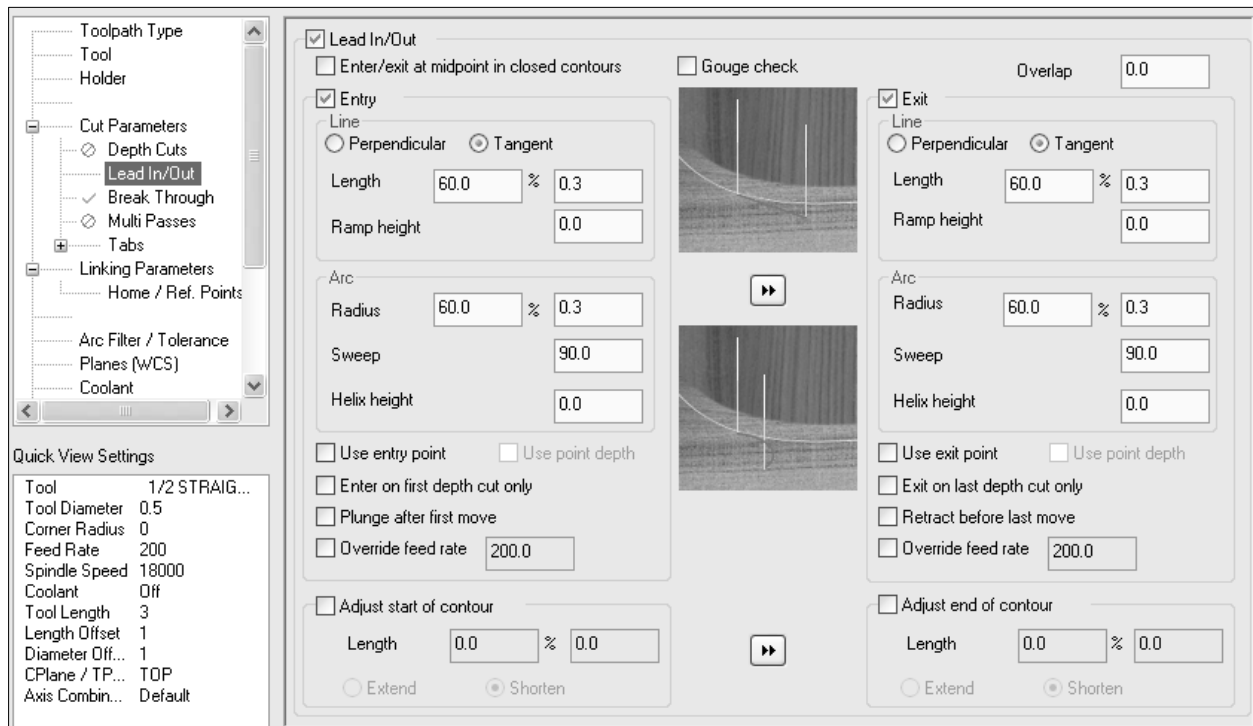
- Select the **Cut Parameters** and fill out the parameter screen as shown in the diagram.



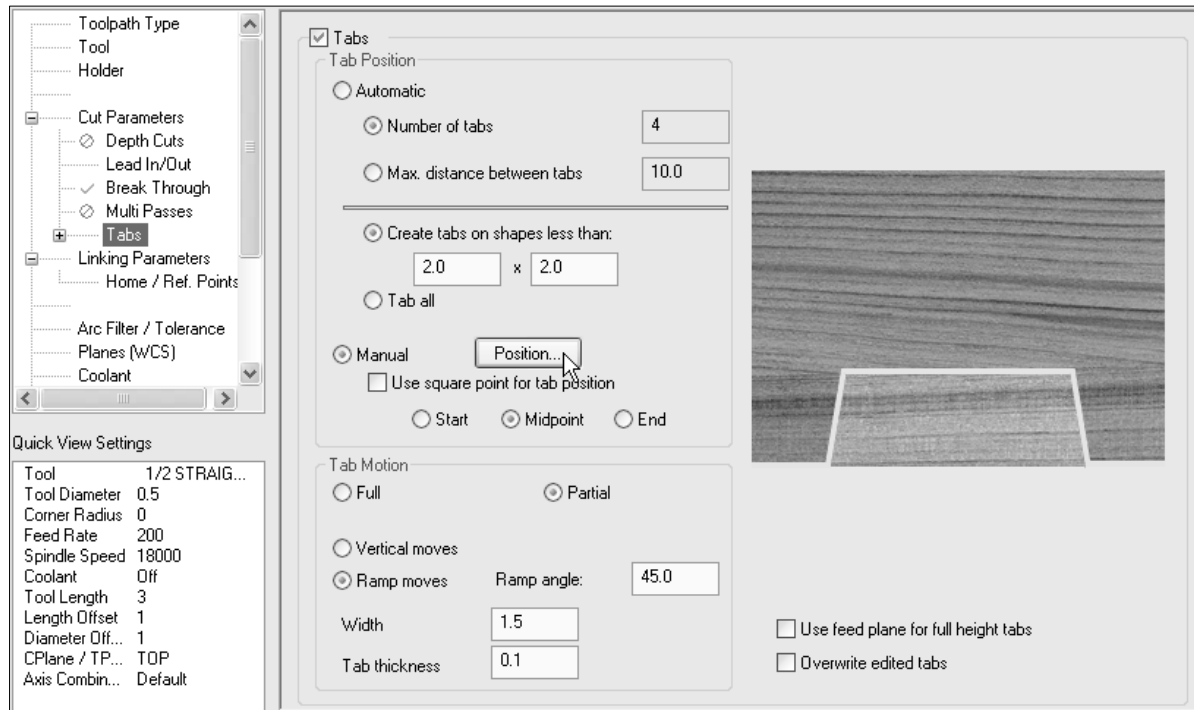
- Select the **Break through** menu and set the **Break through amount** to 0.1 as shown in the following screen shot.



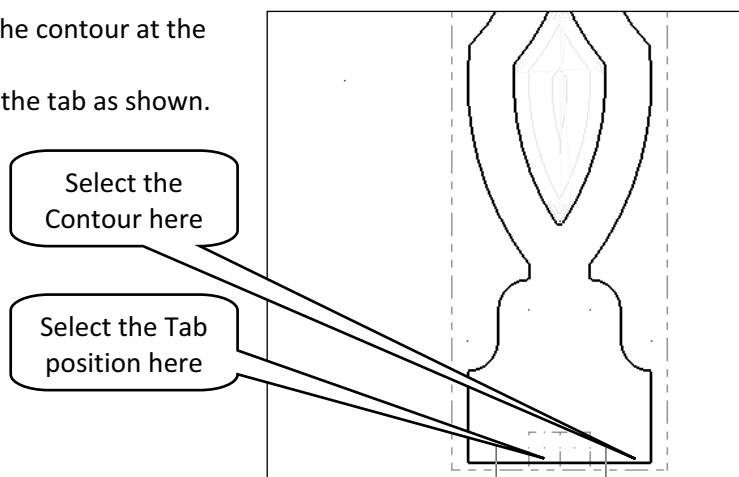
- Select the **Lead in/out** menu and set the parameters as shown in the screenshot below, to establish a smooth entry/exit into material.



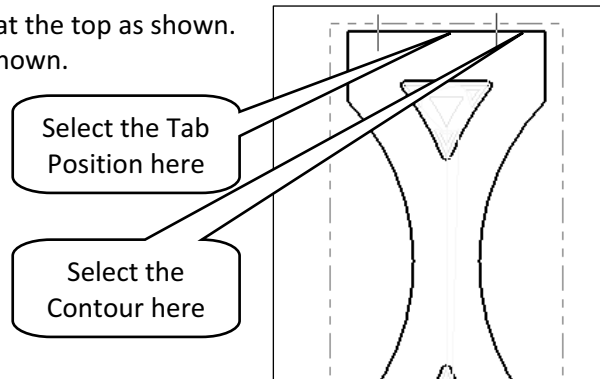
- Select the **Tabs** button from the parameter screen and follow next instructions to establish the tabs size and locations on the part.



- Tabs are used to hold down the part on a small part of the main body of the material because the vacuum clamping might not sufficiently hold it down. The tabs could be either cut off later or broken by hand.
- Choose the **Partial tab**, the **Width** and the **Tab thickness**.
- For the **Tab Position** choose **Manual**.
- Select the **Position** button.
- The graphic mode will be enabled, and you are prompted to choose the contour and the location of the tab.
- [Select chains to add tabs to]: Select the contour at the bottom as shown.
- [Place tab at desired position]: Select the tab as shown.



- [Select chains to add tabs to]: Select the contour at the top as shown.
- [Place tab at desired position]: Select the tab as shown.



- Press **Enter** to exit.
- Press the **OK** button to exit **Tabs** settings.

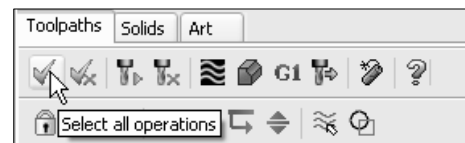


- Select the **OK** button from the parameter screen to exit contour settings.

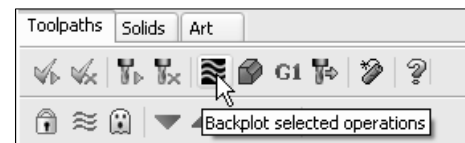


## STEP 21: BACKPLOT THE TOOLPATH

- Click on the **Select all operations** button in the **Toolpaths Manager** tab and.

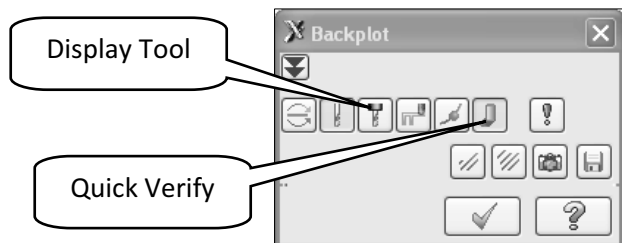


- Select **Backplot selected operations** button.



- Make sure that you have the following buttons turned on. (They look as push-down buttons)

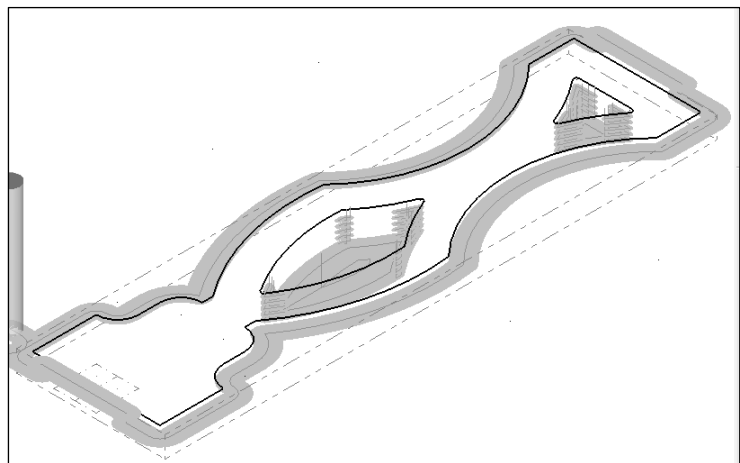
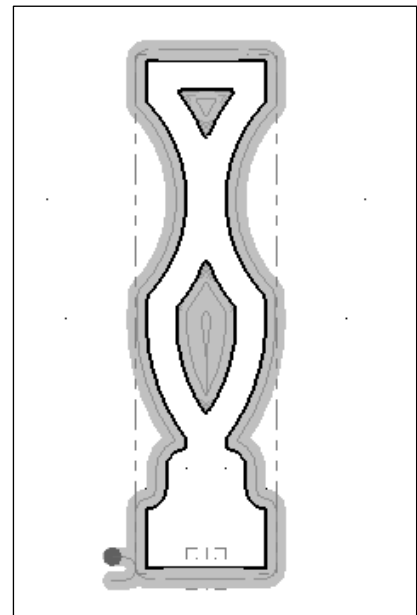
- Enable **Display tool**
- Enable **Quick verify**



➔ Select the **Play** button.



➔ Change the graphic view to **Isometric**.

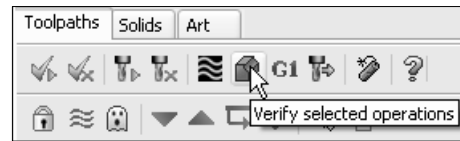


➔ Select the **OK** button to exit **Backplot**.



## STEP 22: VERIFY

- Select **Verify selected operations** button.



**Update after each toolpath** updates the stock after each operation.

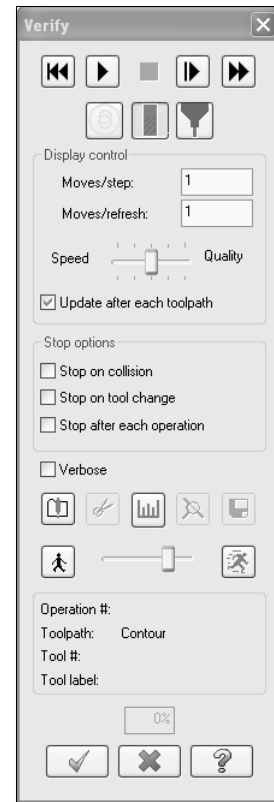
**Stop on collision** pauses the verification when the tool touches the part with a rapid move.

- Set the **Verify speed** by moving the slider bar in the speed control bar.

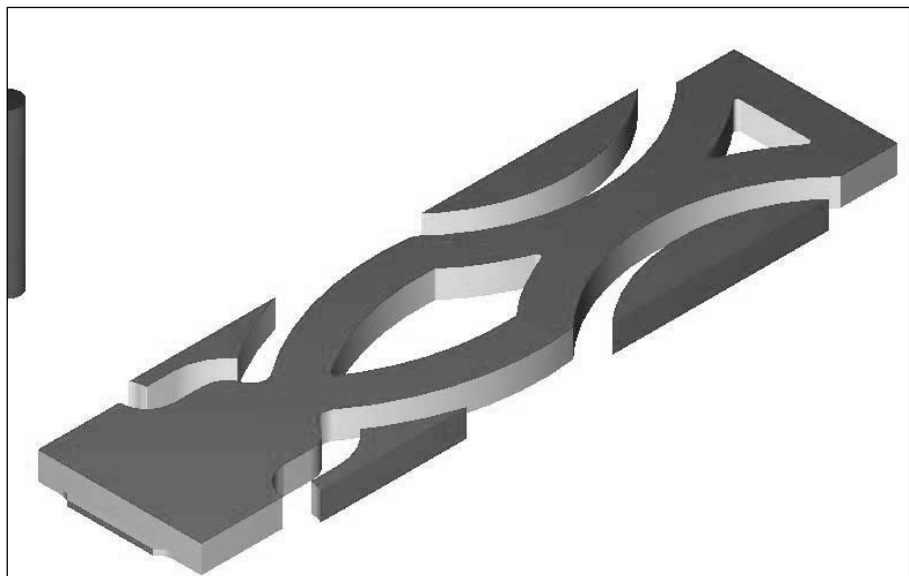


- Select the **Play** button to start simulation.
- The computer will now simulate the process of the part being machined.

*The finished part should appear as shown in the following picture.*



- Select the **OK** button to exit **Verify**.



## STEP 23: SAVE THE UPDATED MCX FILE

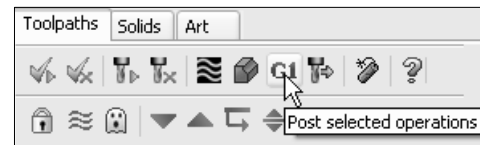
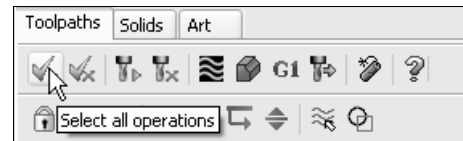
- ➔ Select the **Save** icon. 

## STEP 24: POST THE FILE

- ➔ The final step in Mastercam is to generate the G-codes that the CNC machine controller uses to cut the part. The Post processor is a translator that will translate the NCI file that contains the toolpath information, into the machine controller language.

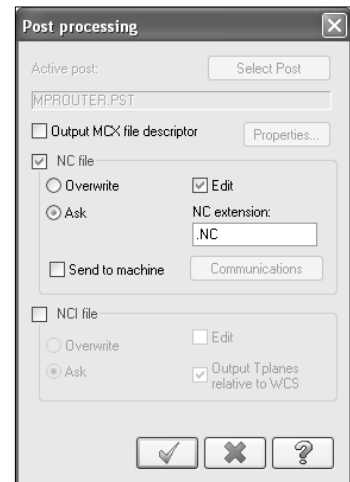
*In this example we are using a generic Fanuc controller.*


- ➔ Make sure that all operations are selected, otherwise:
- ➔ **Select all operations**
- ➔ Select **Post selected operations** button from **Toolpath Manager**.



- ➔ In the **Post processing** window, make all the necessary changes as shown to the right.

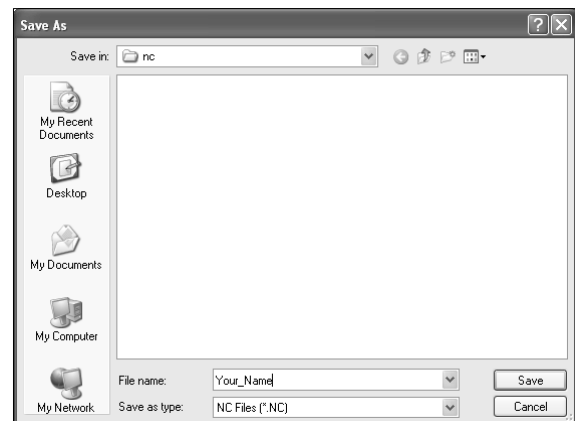
**NC file** enabled allows you to keep the NC file and to assign the same name as the MCX file  
**Edit** enabled allows you to automatically launch the default editor.

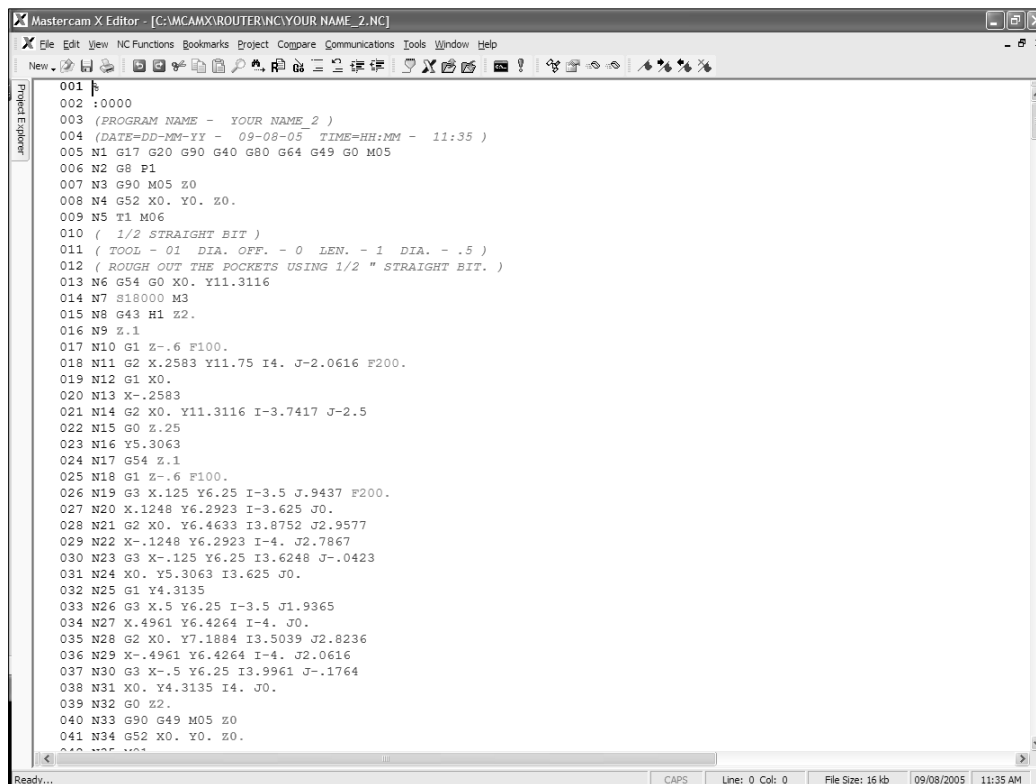


- ➔ Select the **OK** button to continue. 

- ➔ Enter the same name as the geometry name "Your Name \_2" in the **NC File name** field.

- ➔ Select the **OK** button to save the NC file. 





**NOTES:**